NEC

N8100-1511F/1512F/1513F/1514F/1515F
N8100-1516F/1517F/1518F/1519F/1520F

NEC Express5800/R120a-1
User's Guide

1st Edition
3-2009
ONL-510_009_01-R120a1-000-00-0903

PROPRIETARY NOTICE AND LIABILITY DISCLAIMER

The information disclosed in this document, including all designs and related materials, is the valuable property of NEC Corporation (NEC) and /or its licensors. NEC and/or its licensors, as appropriate, reserve all patent, copyright and other proprietary rights to this document, including all design, manufacturing, reproduction, use, and sales rights thereto, except to the extent said rights are expressly granted to others.

The NEC product(s) discussed in this document are warranted in accordance with the terms of the Warranty Statement accompanying each product. However, actual performance of each such product is dependent upon factors such as system configuration, customer data, and operator control. Since implementation by customers of each product may vary, the suitability of specific product configurations and applications must be determined by the customer and is not warranted by NEC.

To allow for design and specification improvements, the information in this document is subject to change at any time, without notice. Reproduction of this document or portions thereof without prior written approval of NEC is prohibited.

First Printing, March 2009
Copyright 2009
NEC Corporation
7-1 Shiba 5-Chome, Minato-Ku
Tokyo 108-8001, Japan
All Rights Reserved
Printed in Japan

Keep this User's Guide at hand for quick reference at anytime necessary.

SAFETY INDICATIONS

Follow the instructions in this User's Guide for your safety to use the server.

The server contains components with possible danger, hazards that may cause by ignoring warnings, and preventive actions against such hazards.

Server components with possible danger are indicated with a warning label placed on or around them as well as described in this User's Guide.

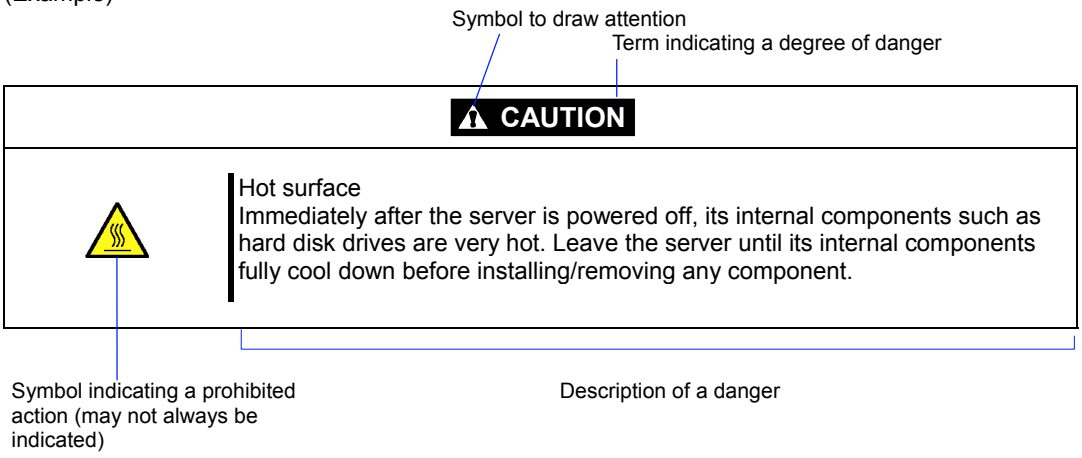
In the User's Guide or warning labels, "WARNING" or "CAUTION" is used to indicate a degree of danger. These terms are defined as follows:

⚠ WARNING	Indicates the presence of a hazard that may result in death or serious personal injury if the instruction is ignored.
⚠ CAUTION	Indicates the presence of a hazard that may cause minor personal injury, including burns, or property damage if the instruction is ignored.

Precautions and notices against hazards are presented with one of the following three symbols. The individual symbols are defined as follows:

	This symbol indicates the presence of a hazard if the instruction is ignored. An image in the symbol illustrates the hazard type. (Attention)
	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action. (Prohibited Action)
	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard. (Mandatory Action)

(Example)


Symbol to draw attention
Term indicating a degree of danger
CAUTION
Hot surface
Immediately after the server is powered off, its internal components such as hard disk drives are very hot. Leave the server until its internal components fully cool down before installing/removing any component.
Symbol indicating a prohibited action (may not always be indicated)
Description of a danger

SYMBOLS USED IN THIS USER'S GUIDE AND WARNING LABELS

Attentions

	Indicates that improper use may cause an electric shock.
	Indicates that improper use may cause personal injury.
	Indicates that improper use may cause explosion or burst.
	Indicates that improper use may cause fingers to be caught.
	Indicates that improper use may cause personal injury.
	Indicates that improper use may cause fumes or fire.
	Indicates a general notice or warning that cannot be specifically identified.

Prohibited Actions

	Do not disassemble, repair, or modify the server. Otherwise, an electric shock or fire may be caused.
	Keep water or liquid away from the server. Otherwise, an electric shock or a fire may be caused.
	Do not touch the server components with wet hand. Otherwise, an electric shock may be caused.
	Do not place the server near a fire. Otherwise, a fire may be caused.
	Do not touch any other component than specified. Otherwise, an electric shock or burn may be caused.
	Indicates a general prohibited action that cannot be specifically identified.

Mandatory Action

	Unplug the power cord of the server. Otherwise, an electric shock or fire may be caused.
	Be sure to provide earthing. Otherwise, an electric shock or fire may be caused.
	Indicates a mandatory action that cannot be specifically identified. Make sure to follow the instruction.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE Statement

Warning: This is a Class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures (EN55022).

BSMI Statement

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Notes:

(1) No part of this manual may be reproduced in any form without the prior written permission of NEC Corporation.

(2) The contents of this User's Guide may be revised without prior notice.

(3) The contents of this User's Guide shall not be copied or altered without the prior written permission of NEC Corporation.

(4) All efforts have been made to ensure the accuracy of all information in this User's Guide. If you notice any part unclear, incorrect, or omitted in this User's Guide, contact the sales agent where you purchased this product.

(5) NEC assumes no liability arising from the use of this product, nor any liability for incidental or consequential damages arising from the use of this User's Guide regardless of Item (4).

(6) If you find any missing pages or pages out of order in this manual, please contact your dealer for a replacement.

Trademarks

NEC ESMPRO and NEC EXPRESSBUILDER are trademarks of NEC Corporation.
Microsoft, Windows, Windows Server, and MS-DOS are registered trademarks or trademarks of Microsoft Corporation in the United States and other countries.
Intel, Pentium, and Xeon are registered trademarks of Intel Corporation.
PCI Express is a trademark of Peripheral Component Interconnect Special Interest Group.
Datalight is a registered trademark of Datalight, Inc.
ROM-DOS is a registered trademark of Datalight, Inc.
AT is a registered trademark of International Business Machines Corporation in the United States and other countries.
Adaptec and its logo is a registered trademark of Adaptec, Inc. of United States.
SCSI*Select* is a trademark of Adaptec, Inc. of the United States.
LSI and the LSI logo design are trademarks or registered trademarks of LSI Corporation.
Adobe, Adobe logo, and Acrobat are trademarks of Adobe Systems Incorporated.
DLT and DLTtape are trademarks of Quantum Corporation of the United States.
AVOCENT and DVC (Dambrackas Video Compression) are registered trademarks or trademarks of AVOCENT in the United States and other countries.
All other product, brand, or trade names used in this publication are the trademarks or registered trademarks of their respective trademark owners.

Windows Server 2008 stands for Microsoft® Windows Server® 2008 Standard operating system and Microsoft® Windows Server® 2008 Enterprise operating system. Windows Vista stands for Microsoft® Windows Vista® Business operating system. Windows Server 2003 x64 Editions stands for Microsoft® Windows Server® 2003 R2, Standard x64 Edition Operating system and Microsoft® Windows Server® 2003 R2, Enterprise x64 Edition operating system, or Microsoft® Windows Server® 2003, Standard x64 Edition operating system and Microsoft® Windows Server® 2003, Enterprise x64 Edition operating system. Windows Server 2003 stands for Microsoft® Windows Server® 2003 R2, Standard Edition operating system and Microsoft® Windows Server® 2003 R2, Enterprise Edition operating system, or Microsoft® Windows Server® 2003, Standard Edition operating system and Microsoft® Windows Server® 2003, Enterprise Edition operating system. Windows XP x64 Edition stands for Microsoft® Windows® XP Professional x64 Edition operating system. Windows XP stands for Microsoft® Windows® XP Home Edition operating system and Microsoft® Windows® XP Professional operating system. Windows 2000 stands for Microsoft® Windows® 2000 Server operating system and Microsoft® Windows® 2000 Advanced Server operating system, and Microsoft® Windows® 2000 Professional operating system. Windows NT stands for Microsoft® Windows NT® Server network operating system version 3.51/4.0 and Microsoft® Windows NT® Workstation operating system version 3.51/4.0. Windows Me stands for Microsoft® Windows® Millennium Edition operating system. Windows 98 stands for Microsoft® Windows®98 operating system. Windows 95 stands for Microsoft® Windows®95 operating system. WinPE stands for Microsoft® Windows® Preinstallation Environment.

Momentary voltage drop prevention:

This product may be affected by a momentary voltage drop caused by lightning. To prevent a momentary voltage drop, an AC uninterruptible power supply (UPS) unit should be used.

PREFACE

Welcome to the NEC Express5800/R120a-1 server.

The NEC Express5800 server holds powerful performance and employs the latest technology to implement a computer for the next generation. With its potential capabilities, the server may be used as the workstation PC that configures a client-server system and provides high-speed processing and superior reliability.

Read this User's Guide thoroughly to fully understand handling of the server and appreciate its functions to the maximum extent.

ABOUT THIS USER'S GUIDE

This User's Guide is a guide for proper setup and use of the server.
This User's Guide also covers useful procedures for dealing with difficulties and problems that may arise during setup or operation of the server.
Keep this manual for future use.
The following describes how to proceed with this User's Guide.

How to Use This User's Guide

To aid you in finding information quickly, this User's Guide contains the following information:

Chapter 1 Notes on Using Your Server
includes information that needs attention to use the server. Make sure to read this chapter before setting up and using the server. It also includes requirements and advisory information for transfer and disposal of the server.

Chapter 2 General Description
includes information necessary to use the server, such as names and functions of its components, handling of the optical disk drive.

Chapter 3 Setting Up Your Server
tells you how to select a site, unpack the system, assemble the rack-mount subsystem, make cable connections, and power on your system.

Chapter 4 Configuring Your Server
tells you how to configure the system and provides instructions for running the BIOS SETUP Utility and the RAID Configuration utility, which is used to configure RAID System in your system. This chapter also provides information on mother board jumper settings.

Chapter 5 Installing the Operating System with Express Setup
describes how to install the operating system.

Chapter 6 Installing and Using Utilities
describes how to install the utilities for the server. It also includes a description on using the attached "NEC EXPRESSBUILDER" DVD.

Chapter 7 Maintenance
provides you with all the information necessary to maintain successful operation of the server. This chapter also includes a description on relocating and storing the server.

Chapter 8 Troubleshooting
contains helpful information for solving problems that might occur with your system.

Chapter 9 Upgrading Your Server
provides you with instructions for upgrading your system with an additional processor, optional memory, optional add-in cards, hard disk drives, peripheral devices, and power supply.

Appendix A Specification
provides specifications for your server.

Appendix B Other Precautions
provides supplementary notes on using the server.

Appendix C IRQ and I/O Port Address
provides a list of factory-set IRQs and I/O port addresses assigned.

Appendix D Installing Windows Server 2008
describes how to install Microsoft Windows Server 2008 without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2008. See Chapter 5 for details.

Appendix E Installing Windows Server 2003 x64 Editions
describes how to install Microsoft Windows Server 2003 x64 Editions without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2003 x64 Editions. See Chapter 5 for details.

Appendix F Installing Windows Server 2003
describes how to install Microsoft Windows Server 2003 without using Express Setup. Using the Express Setup tool is recommended for installing Windows Server 2003. See Chapter 5 for details.

Appendix G Using a Client Computer Which Has a CD Drive
describes how to install the management software of EXPRESSBUILDER to the client computer without the DVD drive.

Appendix H Product Configuration Record Table
provides a table to be filled with your server configuration.

Text Conventions

The following conventions are used throughout this User's Guide. For safety symbols, see "SAFETY INDICATIONS" provided earlier.

IMPORTANT:	Items that are mandatory or require attention when using the server
NOTE:	Helpful and convenient piece of information

IN THE PACKAGE

The carton contains various accessories, as well as the server itself. See the packing list or "Getting Started" guide to make sure that you have everything and that individual components are not damaged. If you find any component missing or damaged, contact your service representative.

CONTENTS

Preface i
About This User's Guide ii
In the Package iii

Chapter 1 Notes on Using Your Server 1-1

Warning Labels 1-2
Safety Notes 1-3
General 1-3
Power Supply and Power Cord Use 1-5
Rack 1-6
Installation, Relocation, Storage, and Connection 1-7
Cleaning and Working with Internal Devices 1-9
During Operation 1-10
For Proper Operation 1-11
Transfer to Third Party 1-13
Disposal and Consumables 1-14
User Support 1-15

Chapter 2 General Description 2-1

Overview 2-2
External View 2-3
Front View with Front Bezel Closed 2-4
Front View with Front Bezel Removed 2-5
Rear View 2-7
Internal View 2-9
Mother Board 2-11
Status Indicators 2-12
POWER LED 2-12
STATUS LED 2-12
DISK ACCESS LED 2-14
ACT LED 2-14
UID LED (UID) 2-14
Disk Access LED 2-14
Hard Disk Drive LED 2-15
LAN Connector LEDs 2-17
AC POWER LED 2-18
Standard Features 2-19
Remote Management Feature 2-20
Degradation Feature 2-21
Memory RAS Features 2-21
Remote Power-On Feature (Wake On LAN) 2-21
AC-Link Feature 2-21
System Security 2-22
Notes on Using Power Control Feature 2-23
NEC EXPRESSBUILDER 2-25
NEC ESMPRO 2-26

Maintenance Tools....2-26
System Diagnostic Utility....2-26
Using Your Server....2-27
Front Bezel....2-27
POWER Switch....2-29
Identification of Servers ~ UID Switch ~....2-34
Optical Disk Drive....2-35

Chapter 3 Setting Up Your Server....3-1

Setup Flow....3-2
Selecting Server Site....3-3
Installing the Server....3-5
Installation....3-6
Removal....3-14
Connecting Peripheral Devices....3-18
Connecting Power Cord....3-20
Turning On the Server....3-22
Installing Operating System....3-23
Installing Utilities....3-23
Making Backup Copies of System Information....3-23

Chapter 4 Configuring Your Server....4-1

System BIOS (SETUP)....4-1
Starting SETUP Utility....4-2
Description on On-Screen Items and Key Usage....4-3
Menu and Parameter Descriptions....4-4
RAID System Configuration....4-23
RAID....4-23
Configuration by Onboard RAID Controller (3.5-inch Disk Model)....4-29
LSI Software RAID Configuration Utility and Universal RAID Utility....4-43
Configuration by Internal RAID Controller (2.5-inch Disk Model)....4-46
Before Using WebBIOS....4-51
Using WebBIOS....4-54
Configuring Virtual Drive....4-69
Operation of Various Features....4-85
Locate....4-96
Slow Initialize....4-97
WebBIOS and Universal RAID Utility....4-98
Configuring Mother Board Jumpers....4-102

Chapter 5 Installing the Operating System with Express Setup....5-1

About Express Setup....5-2
Windows Server 2008....5-3
Notes on Windows Installation....5-3
Flow of Setup....5-7
Installing the Windows Server 2008....5-8
Installing and Setting Device Drivers....5-22

Windows Server 2003 5-32
Notes on Windows Installation 5-32
Flow of Setup 5-38
Installing the Windows Server 2003 5-39
Installing and Setting Device Drivers 5-48
Setting for Solving Problems 5-58
Memory Dump (Debug Information) - Windows Server 2008 - 5-58
Memory Dump (Debug Information) - Windows Server 2003 - 5-61
How to Create a User-mode Process Dump File 5-64
Network Monitor 5-66
Re-installing the Operation System if Multiple Logical Drives Exist 5-68
Installing Maintenance Utilities 5-70
Updating the System 5-70
Making Backup Copies of System Information 5-71
Installing with the OEM-Disk for Mass Storage Device 5-72

Chapter 6 Installing and Using Utilities 6-1

NEC EXPRESSBUILDER 6-2
Autorun Menu 6-6
Parameter File Creator 6-7
Parameter File 6-8
NEC ESMPRO 6-20
Functions and Features 6-20
Universal RAID Utility 6-21
Setup with Express Setup 6-21
Manual Setup 6-22
Using Universal RAID Utility via Network 6-23
Easy Configuration 6-23
Creating Logical Drive of RAID 6 6-23
NEC Product Info Collection Utility 6-24
Installation 6-24
Using Utility 6-25
Uninstallation 6-25

Chapter 7 Maintenance 7-1

Making Backup Copies 7-1
Cleaning 7-2
Cleaning the Server 7-3
Cleaning the Interior 7-4
Cleaning the Keyboard/Mouse 7-5
Cleaning Disc 7-6
System Diagnostics 7-7
Test Items 7-7
Startup and Exit of System Diagnostics 7-8
Relocating/Storing The Server 7-11

Chapter 8 Troubleshooting 8-1

System Viewers 8-2
LEDs 8-2
Error Messages 8-3
Error Messages after Power-on 8-3
POST Error Messages 8-4
Messages displayed by RAID Controller during POST 8-8
Beep Codes 8-12
Error Messages on Virtual LCD 8-13
Solving Problems 8-16
Problems with the Server 8-16
Problems with RAID System and RAID Controller 8-23
Problems with Windows 8-28
Problems with N8190-127/131 FibreChannel Controller 8-34
Problems with NEC EXPRESSBUILDER 8-35
Problems with Express Setup 8-36
Problems with Parameter File Creator 8-37
Problems with Autorun Menu 8-38
Collecting Dr. Watson Diagnostic Information 8-39
Memory Dump 8-39
Preparing for Memory Dumping 8-39
Saving the Dump File 8-40
Recovery for Windows System 8-41
Maintenance Tools 8-42
Starting Maintenance Tools 8-42
Function of Maintenance Tools 8-44
Maintenance Tools with Remote Console 8-46
Resetting the Server 8-48
Forced Shutdown 8-49

Chapter 9 Upgrading Your Server 9-1

Safety Notes 9-2
Anti-static Measures 9-3
Preparing for Installation and Removal 9-4
Hard Disk Drive 9-6
3.5-inch Disk Model 9-6
2.5-inch Disk Model 9-8
Installation 9-9
Removal 9-15
Notes on Replacing Hard Disk Drives in the RAID System 9-18
Power Supply Unit 9-19
Installation 9-19
Replacing a Failing Power Supply Unit 9-22
Top Cover 9-23
Removal 9-23
Installation 9-23

DIMM 9-24
Installation Order 9-25
Memory Clock 9-27
Memory RAS Feature 9-27
Installation 9-28
Removal 9-30
Using the Memory RAS Features 9-31
Processor (CPU) 9-38
Installation 9-39
Removal 9-45
PCI Board 9-46
Notes 9-48
Installation 9-49
Removal 9-52
Installing RAID Controller 9-53
Removing RAID Controller 9-55
Installing Additional Battery for RAID Controller 9-56
Use of Internal Hard Disk Drives in the RAID System 9-76
3.5-inch Disk Model 9-77
2.5-inch Disk Model 9-79
Floppy Disk Drive 9-81
Optical Disk Drive 9-85
Replacement Procedure 9-86

Appendix A Specifications A-1

Appendix B Other Precautions B-1

Transfer Rate of the On-board LAN controller B-1
Server Management Software B-1
Floppy Disk B-1
CD/DVD Discs B-4
Tape Media B-4
Keyboard B-5
Mouse B-6

Appendix C IRQ C-1

Appendix D Installing Windows Server 2008 ..... D-1

Notice D-1
Optional Board Supported by NEC EXPRESSBUILDER D-1
Service Pack Which EXPRESSBUILDER Supports D-2
Installing Service Pack D-2
Updating System D-2
Installing on the Mirrored Volume D-2
Mounting MO Device D-2
About Removable Media D-2
Floppy Disk Drive D-2
About the System Partition Size D-3

Installing Windows Server 2008 ..... D-5
Preparations for Installation D-5
Creating "Windows Server 2008 OEM-Disk for EXPRESSBUILDER" D-5
Windows Server 2008 Clean Installation D-8
Updating the System D-28
Driver Installation and Advanced Settings D-31
LAN Driver and PROSet D-31
Network Driver D-33
Optional Network Board Driver (N8104-112/119/120/121/122/125) D-33
Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB) D-34
Setting WOL D-37
Graphics Accelerator Driver D-38
Installing SCSI Controller Driver (N8103-75/95/107) D-38
Installing SAS Controller Driver (N8103-104A) D-38
Installing RAID Controller Driver (N8103-115) D-39
Installing Fibre Channel Controller Driver (N8190-127/131) D-40
About Windows Activation D-41
The procedure to set PAE option D-45
Setting for Solving Problems D-46

Appendix E Installing Windows Server 2003 x64 Editions E-1

Notice E-1
Optional Board Supported by NEC EXPRESSBUILDER E-1
Service Pack Which EXPRESSBUILDER Supports E-2
Installing Service Pack E-2
Updating System E-2
Re-installing to the Hard Disk Drive which has been upgraded to Dynamic Disk E-2
Mounting MO Device E-2
About Removable Media E-2
Floppy Disk Drive E-2
About the System Partition Size E-3
Installing Windows Server 2003 x64 Editions E-4
Creating "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER" E-5
Windows Server 2003 x64 Editions Clean Installation E-7
Updating the System - Applying Service Pack - E-10
Driver Installation and Advanced Settings E-17
PROSet E-17
Network Driver E-19
Optional Network Board Driver E-20
Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB) E-21
Setting WOL E-23
Graphics Accelerator Driver E-25
Installing SCSI Controller Driver (N8103-75/107) E-25
Installing SCSI Controller Driver (N8103-95) E-25
Installing SAS Controller Driver (N8103-104A) E-25
Installing RAID Controller Driver (N8103-115) E-26
About Windows Activation E-27
Setting for Solving Problems E-28

Appendix F Installing Windows Server 2003 ..... F-1

BEFORE INSTALLING WINDOWS SERVER 2003 ..... F-1
Optional Board Supported by NEC EXPRESSBUILDER F-1
Service Pack Which EXPRESSBUILDER Supports F-2
Application of Service Pack F-2
Updating System F-2
Re-installing to the Hard Disk which has been upgraded to Dynamic Disk F-2
Mounting MO Device F-2
About Removable Media F-3
Floppy Disk Drive F-3
About the Upgrade to Windows Server 2003 R2 ..... F-3
About the System Partition Size F-4
Installing Windows Server 2003 ..... F-6
Creating "Windows Server 2003 OEM-Disk for EXPRESSBUILDER" F-7
Windows Server 2003 Clean Installation F-9
Procedure for License Authentication F-13
Updating the System - Applying Service Pack - F-13
Driver Installation and Advanced Settings F-20
PROSet F-20
Network Driver F-21
Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB) F-22
Setting WOL F-22
Graphics Accelerator Driver F-24
Installing SCSI Controller Driver (N8103-75/95/107) F-24
Installing SAS Controller Driver (N8103-104A) F-24
Installing RAID Controller Driver (N8103-115) F-25
About Windows Activation F-26
The procedure to set PAE option F-28
Setting for Solving Problems F-28

Appendix G Using a Client Computer Which Has a CD Drive G-1

Appendix H Product Configuration Record Table H-1

Hardware H-1
Software H-3

Chapter 1

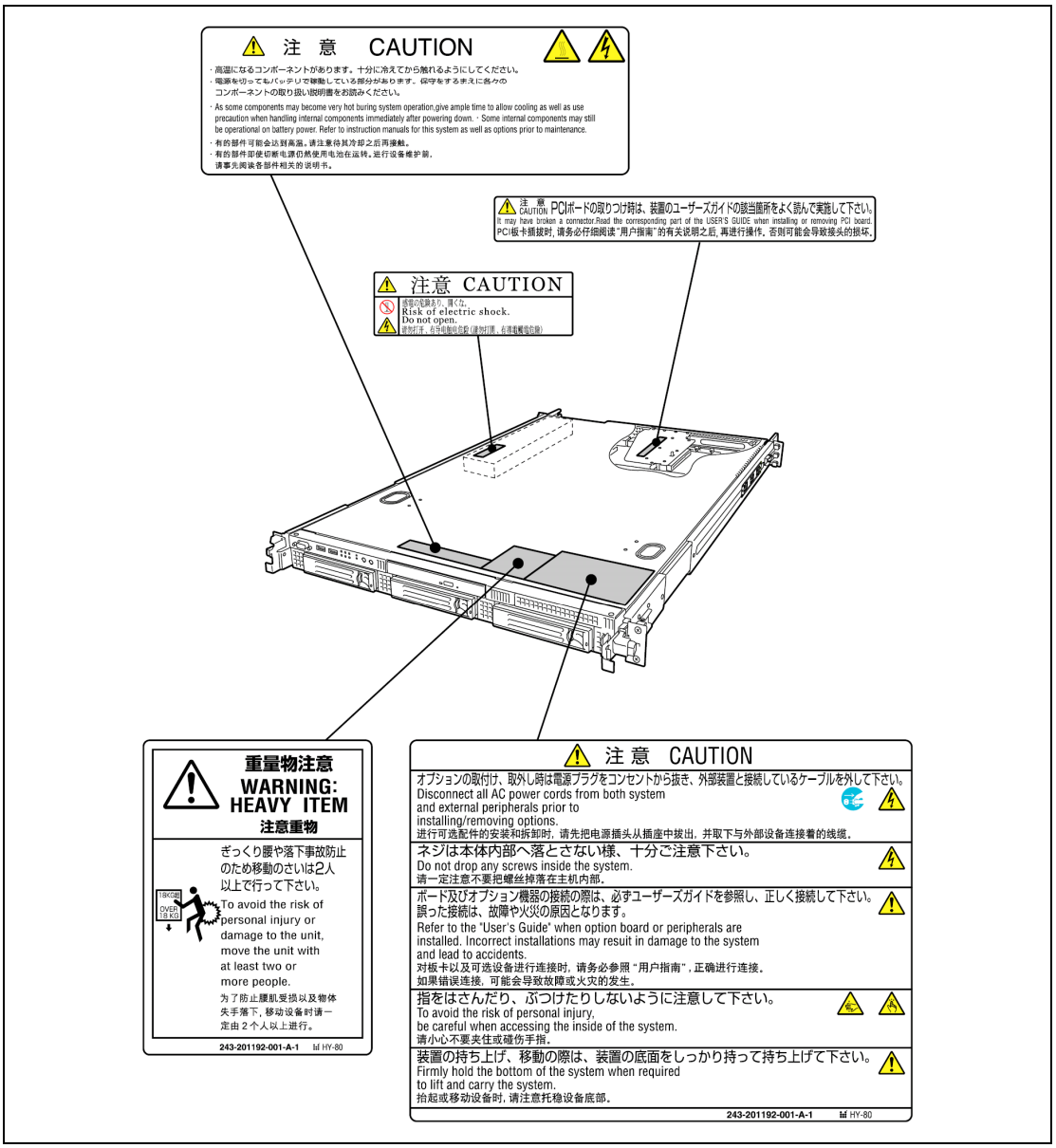
Notes on Using Your Server

This chapter includes information necessary for proper and safe operation of the server.

WARNING LABELS

The warning label is attached to components with possible danger or their vicinity in your server to inform the user that a hazardous situation may arise when operating the server. (Do not intentionally remove or damage any of the labels.)

If you find any labels totally/partially removed or illegible due to damage, contact your sales representative.


注 意 CAUTION
・高温になるコンポーネントがあります。十分に冷えてから触れるようにしてください。
・電源を切ってもバッテリで稼動している部分があります。保守をする手元に各々の
コンポーネントの取り扱い説明書をお読みください。
・As some components may become very hot during system operation,give ample time to allow cooling as well as use precaution when handling internal components immediately after powering down. ・Some internal components may still be operational on battery power. Refer to instruction manuals for this system as well as options prior to maintenance.
・有的部件可能会达到高温。请注意待其冷却之后再接触。
・有的部件即使切断电源仍然使用电池在运转。进行设备维护前，
请事先阅读各部件相关的说明书。
注 意 CAUTION PCIボードの取りつけ時は、装置のユーザーズガイドの該当箇所をよく読んで実施して下さい。
It may have broken a connector.Read the corresponding part of the USER'S GUIDE when installing or removing PCI board.
PCI板卡插拔时，请务必仔细阅读"用户指南"的有关说明之后，再进行操作，否则可能会导致接头的损坏。
注意 CAUTION
感電の危険あり、開くな。
Risk of electric shock.
Do not open.
請勿打开，有导电触电危险（請勿打開，有導電觸電危險）
重量物注意
WARNING:
HEAVY ITEM
注意重物
ぎっくり腰や落下事故防止のため移動のさいは2人以上で行って下さい。
To avoid the risk of personal injury or damage to the unit, move the unit with at least two or more people.
为了防止腰肌受损以及物体失手落下，移动设备时请一定由２个人以上进行。
18KGS OVER 18 KG
243-201192-001-A-1 HY-80
注 意 CAUTION
オプションの取付け、取外し時は電源プラグをコンセントから抜き、外部装置と接続しているケーブルを外して下さい。
Disconnect all AC power cords from both system and external peripherals prior to installing/removing options.
进行可选配件的安装和拆卸时，请先把电源插头从插座中拔出，并取下与外部设备连接着的线缆。
ネジは本体内部へ落とさない様、十分ご注意下さい。
Do not drop any screws inside the system.
请一定注意不要把螺丝掉落在主机内部。
ボード及びオプション機器の接続の際は、必ずユーザーズガイドを参照し、正しく接続して下さい。誤った接続は、故障や火災の原因となります。
Refer to the "User's Guide" when option board or peripherals are installed. Incorrect installations may resuit in damage to the system and lead to accidents.
对板卡以及可选设备进行连接时，请务必参照"用户指南"，正确进行连接。
如果错误连接，可能会导致故障或火灾的发生。
指をはさんだり、ぶつけたりしないように注意して下さい。
To avoid the risk of personal injury, be careful when accessing the inside of the system.
请小心不要夹住或碰伤手指。
装置の持ち上げ、移動の際は、装置の底面をしっかり持って持ち上げて下さい。
Firmly hold the bottom of the system when required to lift and carry the system.
抬起或移动设备时，请注意托稳设备底部。
243-201192-001-A-1 HY-80

SAFETY NOTES

This section provides notes on using the server safely. Read this section carefully to ensure proper and safe use of the server. For symbols, see "SAFETY INDICATIONS" provided earlier.

For part names described in the safety instruction chapter in this guide, see Chapter 2.

General

⚠ WARNING

Do not use the server for services where critical high availability may directly affect human lives.

Your server is not intended to be used with or control facilities or devices concerning human lives, including medical devices, nuclear facilities and devices, aeronautics and space devices, transportation facilities and devices; and facilities and devices requiring high reliability. NEC assumes no liability for any accident resulting in personal injury, death, or property damage if the server has been used in the above conditions.

Do not use the server if any smoke, odor, or noise is present.

If smoke, odor, or noise is present, immediately turn off the server and disconnect the power plug from the outlet, then contact your service representative. Using the server in such conditions may cause a fire.

Keep needles or metal objects away from the server.

Do not insert needles or metal objects into ventilation holes in the server or openings in the optical disk drive. Doing so may cause an electric shock.

Do not use the server in any unapproved place.

Install the server on a standard EIA 19-inch rack assembly. Do not install the rack containing the server in a place inappropriate to the rack installation environment.
Failure to follow these instructions may cause some bad influences to be imposed on the server and other systems installed on the rack and also a fire or personal injury due to falling of the rack may occur. For the detailed explanation on the place where the server should be installed and the earthquake-resistant construction for the rack, refer to the manual attached to the rack or contact you service representative.

Always install the server on a rack conforming to the relevant standard.

Install the server on a rack confirming to the EIA standard for the Server to be used. Do not use the server with installed on any other rack than standard EIA 19-inch rack or without the installation on a proper rack. Failure to follow these instructions may cause the server to operate incorrectly and/or personal injury or damages of surrounding devices to occur. Contact your service representative for the racks available for the server.

⚠ CAUTION

Keep water or foreign matter away from the server.

Do not let any form of liquid (water etc.) or foreign matter (e.g., pins or paper clips) enter the server. Failure to follow this warning may cause an electric shock, a fire, or a failure of the server. When such things accidentally enter the server, immediately turn off the power and disconnect the power plug from the outlet. Do not disassemble the server. Contact your service representative.

Power Supply and Power Cord Use

⚠ WARNING

Do not hold the power plug with a wet hand.

Do not disconnect/connect the plug while your hands are wet. Failure to follow this warning may cause an electric shock.

Do not connect the ground wire to a gas pipe.

Never connect the ground wire to a gas pipe. Failure to follow this warning may cause a gas explosion.

⚠ CAUTION

Plug in to a proper power source.

Use a proper wall outlet. Use of an improper power source may cause a fire or a power leak.
Do not install the server where you need an extension cord. Use of a cord that does not meet the power specifications of the server may heat up the cord and cause a fire.

Do not connect the power cord to an outlet that has an illegal number of connections.

The electric current exceeding the rated flow overheats the outlet, which may cause a fire.

Insert the power plug into the outlet as far as it goes.

Heat generation resulting from a halfway inserted power plug (imperfect contact) may cause a fire. Heat will also be generated if condensation is formed on dusty blades of the halfway inserted plug, increasing the possibility of fire.

Use the authorized power cord only.

Use only the power cord that comes with your server. Use of an unauthorized power cord may cause a fire when the electric current exceeds the rated flow. Also, observe the following to prevent an electric shock or fire caused by a damaged cord.

- Do not stretch the cord harness.
- Do not pinch the power cord.
- Do not bend the power cord.
- Keep chemicals away from the power cord.
- Do not twist the power cord.
- Do not place any object on the power cord.
- Do not bundle power cords.
- Do not alter, modify, or repair the power cord.
- Do not secure the power cord with staples or equivalents.
- Do not use any damaged power cord. (Replace a damaged power cord with a new one of the same specifications. Ask your service representative for replacement.)

Do not use the attached power cord for any other devices or usage.

The power cord that comes with your server is designed aiming to connect with this server and to use with the server, and its safety has been tested. Do not use the attached power cord for any other purpose. Doing so may cause a fire or an electric shock.

Rack

⚠ CAUTION

Do not carry or install the server only by a single person.

More than one person is required to carry or install the rack. Failure to follow this instruction may cause the rack to fall to result in personal injury and/or breakages of surrounding devices. In particular, a high rack (such as 44U rack) is unstable if it is not fixed by stabilizers. More than one person must always carry or install the rack while they support it.

Do not install the server so that the load may be concentrated on a specific point.

Install stabilizers on the rack so that the total load of the rack and devices mounted on the rack is not concentrated on a singe point or join more than one rack with each other to distribute the load. Failure to follow this instruction may cause the rack to fall to result in personal injury.

Do not install components on the server only by a single person.

More than one person is required to install parts including the doors and trays for the rack. Failure to follow this instruction may cause some parts to fall to be broken and/or to result in personal injury.

Insert hinges completely.

When installing the rack door, make sure that hinge pins at top and bottom of the door are completely inserted into the rack. Failure to follow this instruction may cause the door to fall to be broken and/or to result in personal injury.

Anchor the equipment rack.

The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more servers are extended in front of it on slide assemblies. The anchors must be able to withstand a force of up to 113 kg (250 lbs.) You must also consider the weight of any other device installed in the rack.

Do not leave more than one device being pulled out from the rack.

Pulling out more than one device from the rack may cause the rack to be fallen. Only pull out a single device from the rack at a time.

Do not provide the wiring for the server to exceed the rating of the power supply.

To prevent burns, fires, and device damages, the power supplied to the power supply in the rack shall not exceed the rating load of the power branch circuit. Contact your electric constructor or the local power company for the requirements on the wiring and installation of electric facilities.

Installation, Relocation, Storage, and Connection

⚠ WARNING

Disconnect the power cord(s) before installing or removing the server.

Make sure to power off the server and disconnect the power cord(s) from a power outlet before installing/removing the server. All voltage is removed only when the power cords are unplugged.

⚠ CAUTION

Never attempt to lift the server only by yourself.

The server weighs max. 21 kg (depending on its hardware configuration). Carrying the server only by yourself may strain your back. Hold the server firmly by its bottom with another person to carry it. Do not hold the front door to lift the server. The front door may be disengaged from the server, causing personal injury.

Do not install the server in any place other than specified.

Do not install the server in the following places or any place other than specified in this User's Guide. Failure to follow this instruction may cause a fire.

- a dusty place
- a humid place such as near a boiler
- a place exposed to direct sunlight
- an unstable place

Do not install the server on a rack with leaving covers removed.

Do not install the server on a rack with the cover being removed. Failure to follow this instruction may reduce the cooling effect in the server to result in some malfunction and/or dusts to enter the server to result in a fire or electric shock.

Do not pinch your finger with rails or other components.

Note sufficiently that your fingers may not be caught between a rail and another mechanical part or cut by a rail at installation or removal of the server from the rack.

Do not apply any load on the server pulled out from the rack.

Do not apply any load on the server pulled out from the rack. Doing so bends the frame of the server. Consequently, the server cannot be pushed back into the rack. Placing an object on the server may also cause personal injury if the server drops.

⚠ CAUTION

Do not connect any interface cable with the power cord of the server plugged to a power source.

Make sure to power off the server and unplug the power cord from a power outlet before installing/removing any optional internal device or connecting/disconnecting any interface cable to/from the server. If the server is off-powered but its power cord is plugged to a power source, touching an internal device, cable, or connector may cause an electric shock or a fire resulted from a short circuit.

Do not use any unauthorized interface cable.

Use only interface cables provided by NEC and locate a proper device and connector before connecting a cable. Using an authorized cable or connecting a cable to an improper destination may cause a short circuit, resulting in a fire. Also, observe the following notes on using and connecting an interface cable.

- Do not use any damaged cable connector.
- Do not step on the cable.
- Do not place any object on the cable.
- Do not use the server with loose cable connections.

Cleaning and Working with Internal Devices

⚠ WARNING

Do not disassemble, repair, or alter the server.

Never attempt to disassemble, repair, or alter the server on any occasion other than described in this User's Guide. Failure to follow this instruction may cause an electric shock or fire as well as malfunctions of the server.

Do not remove the lithium battery.

The server contains the lithium battery. Do not remove the battery. Placing the lithium close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium battery, contact your service representative. Do not disassemble the server to replace or recharge the battery by yourself.

Disconnect the power plug before cleaning the server.

Make sure to power off the server and disconnect the power plug from a power outlet before cleaning or installing/removing internal optional devices. Touching any internal device of the server with its power cord connected to a power source may cause an electric shock even of the server is off-powered.

Disconnect the power plug from the outlet occasionally and clean the plug with a dry cloth. Heat will be generated if condensation is formed on a dusty plug, which may cause a fire.

⚠ CAUTION

Avoid installation in extreme temperature conditions.

Immediately after the server is powered off, its internal components such as hard disk drives are very hot. Leave the server until its internal components fully cool down before installing/removing any component.

Make sure to complete board installation.

Always install a board firmly. An incompletely installed board may cause a contact failure, resulting in smoking or fire.

Do not touch any electrical components inside the server during the hot-swap replacement.

All power flows inside the server while the hot-swap replaceable components (hard disk and power supply). Do not touch the electrical components inside the server to avoid an electric shock.

During Operation

⚠ CAUTION

Do not pull out or remove the server from the rack unnecessarily.

Do not pull out or remove the server from the rack unnecessarily. Pulling out or removing the server from the rack may cause not only the server to operate incorrectly but also the server to fall on people to make them injured.

Stay away from the fan.

Keep your hand or hair away from the cooling fan on the rear of the server. Failure to follow this warning may get your hand or hair caught in the fan, resulting in injury.

Avoid contact with the server during thunderstorms.

Disconnect the power plug from the outlet when a thunderstorm is approaching. If it starts thundering before you disconnect the power plug, do not touch any part of the server including the cables. Failure to follow this warning may cause a fire or an electric shock.

Keep animals away from the server.

Failure to follow this warning may cause a fire or an electric shock.

Do not place any object on top of the server.

The server may fall and cause property damage to the surroundings.

Do not leave the server with its optical disk drive tray ejected.

Dust may enter the server through openings and cause malfunctions of the server. Any person may also bump it and get injured.

FOR PROPER OPERATION

Observe the following notes for successful operation of the server. Use of the server ignoring the notes will cause malfunctions or failures of the server.

- Install the rack assembly in a place that meets requirements for successful operation. For details, see Chapter 3, "Setting Up Your Server."
- The server is intended for installation in a Restricted Access Location, mounted above a non-combustible material.
- Make sure to power off the server before connecting or disconnecting cables between the server and peripheral devices.
- Verify that the access LED on the server is unlit before turning off the server or ejecting the floppy disk.
- The server management logic on your system board monitors and logs system voltage changes. When plugging the power cord to the system, you may experience 30 seconds delay from the time you press the POWER switch on the front panel. This is normal system operation and is required by the server management logic.
- Do not turn off the server until the POST (Power On Self-Test) completes. See Chapter 2 for details of POST.
- When you have just turned off the server, wait at least 30 seconds before turning it back on.
- When unplug the power cord(s) from the server, wait at least 30 seconds before re-pluging the power cord(s) to the server.
- Turn off the power and unplug the power cord from the outlet before relocating the server.
- Clean the server on a regular basis. (See Chapter 7 for cleaning.) Regular cleaning proactively prevents various failures of the server.
- Lightning may cause a momentary voltage drop. To prevent this problem, it is recommended to use of an uninterruptible power supply unit.
- Check and adjust the system clock before the operation if any of the following conditions is applicable.
  - After carriage of device
  - After storage of device
  - After the device is entered into the pause state under the environmental condition enduring device operation (temperature: 10°C - 35°C, humidity: 20% - 80%)
- Check the system clock at the rough rate of once per month. When the system clock is installed in a system requiring high time precision, it is recommended to use a time server (NTP server).
  If the system clock is remarkably delayed or advanced as the passage of time in spite of adjustment, contact your service representative to ask maintenance.

- Store the unit under the storage condition (temperature: –10°C - 55°C, humidity: 20% - 80%, without condensation) to allow built-in devices and the unit to operate correctly in the next operation.
- Make sure to use optional devices supported by the server. Some non-supported devices may be physically installed/connected but cause failures of the server as well as a malfunction of the server.
- NEC recommends you use NEC's genuine products. Some third-party products claim that they support the server. However, repair of the server due to a failure or damage resulted from use of such third-party products will be charged.
- Turn off the cellular phone or pager. Radio interference may cause malfunctions of the server.

TRANSFER TO THIRD PARTY

The following must be observed when you transfer (or sell) the server or software provided with the server to a third party:

Server Hardware

Make sure to provide this User's Guide along with the server to a third party.

Provided Software

To transfer or sell any software application that comes with the server to a third party, the following requirements must be satisfied:

- All provided software applications must be transferred and no backup copies must be retained.
- Transfer requirements listed in "Software License Agreement" that comes with each software application must be satisfied.
- Software applications that are not approved for transfer must be uninstalled before transferring the server.

DISPOSAL AND CONSUMABLES

- Dispose the server, all the internal devices and DVD-ROMs according to all national laws and regulations.

> **IMPORTANT:** For disposal (or replacement) of the battery on the mother board of the server, consult with your service representative.

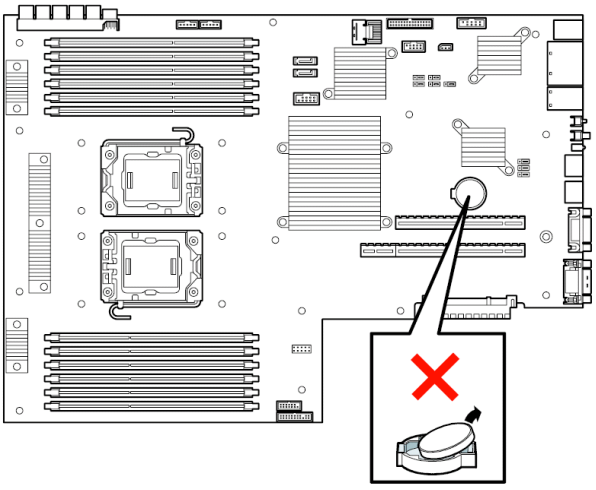
- The server contains some components that are only good for a limited period of time and require replacement, such as fans, internal batteries, the internal optical disk drive, and the mouse. For stable operation of the server, NEC recommends you replace these components on a regular basis. Consult with your service representative for replacement or the product lives.

WARNING

Do not remove the lithium battery.

The server contains the lithium battery. Do not remove the battery. Placing the lithium or nickel cadmium battery close to a fire or in the water may cause an explosion.

When the server does not operate appropriately due to the dead lithium battery, contact your service representative. Do not disassemble the server to replace or recharge the battery by yourself.



Mother board

USER SUPPORT

Before Asking for Repair, do the following when the server appears to fail:

1. Check if the power cord and the cables to other devices are properly connected.
2. See Chapter 8 to find if your problem fits the description. If it does, take the recommended measure for it.
3. Check if the software required for operation of the server is properly installed.

If the server still appears to fail after you have taken the above actions, consult with your service representative immediately. Take notes on LED indications of the server and alarm indications on the display unit before consultation, which may provide a significant help to your service representative.

Advice for Health

The longer you keep using the computer equipment, the more you become tired, which may cause disorders of your body. When you use a computer, observe the following to keep yourself from getting tired:

Good Working Posture

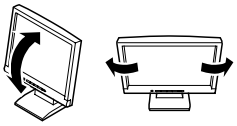
You have good posture if the following are satisfied when you use a computer:

- You sit on a chair with your back straight.
- Your hands are parallel with the floor when you put them on the keyboard.
- You look at the screen slightly lower than your eye height.

You have "good working posture" as described in the above when no part of your body is under excess strain, in other words when your muscles are most relaxed.

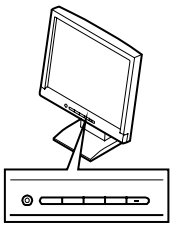
You have "bad posture" when you sit with your back hunched up or you operate a display unit with your face close to the screen. Bad working posture may cause eye strain or poor eyesight.

Adjustment of Display Unit Angles



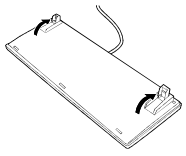
Most display units are designed for adjustment of the horizontal and vertical angles. This adjustment is important to prevent the screen from reflecting bright lights and to make the display contents easy to see. You will not be able to keep "good working posture" and you will feel more tired than you should if you operate a display unit without adjusting horizontal and vertical angles.

Adjustment of Screen Brightness and Contrast

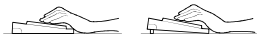


The display unit has brightness and contrast adjustment functions. The most suitable brightness and contrast depend on the individual and the working environment (well-lighted room or insufficient light). Adjust brightness and contrast so that the screen will be easy to see. An extremely bright or dark screen will give a bad effect to your eyes.

Adjustment of Keyboard Angle



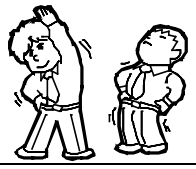
The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



Cleaning of Equipment

Clean equipment regularly. It is difficult to see the display contents on a dusty screen. Keeping equipment clean is also important for your sight.

Fatigue and Rest



If you feel tired, you should stop working and do light exercises.

Chapter 2

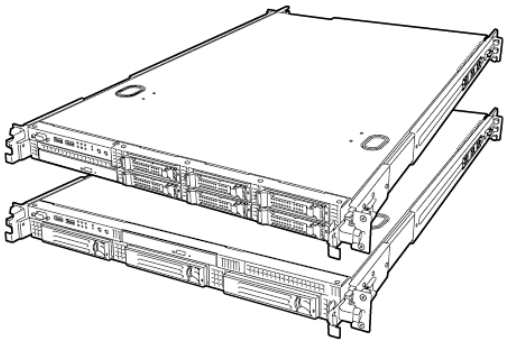
General Description

This chapter provides information that you should be familiar with before using the server. It includes names and functions of the components and features of the server.

OVERVIEW

Your server is a modular, multiprocessing server based on the Intel® Xeon® microprocessor. It is a solid performer and offers the latest technology. The combination of compute performance, memory capacity, and integrated I/O provides a high performance environment for many server market applications. These range from large corporations supporting remote offices to small companies looking to obtain basic connectivity capability such as file and print services, e-mail, web access, web site server, etc.

Your server is housed and available as a rack-mount system. Your server conveniently installs into a standard EIA 19-inch rack assembly.

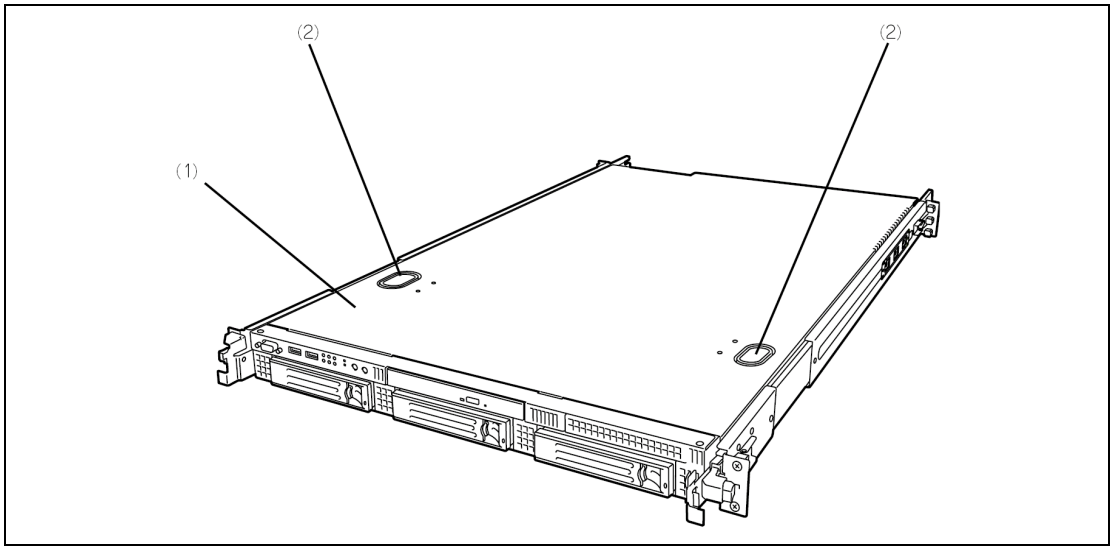


Your server includes a optical disc drive and three (SATA or SAS) or six (SAS) hard disk drive bays. The hot-swap hard disk drive bays support 1.0-inch hard disk drives that can be swapped in or out of the system without powering it down, if RAID functionality is configured in the system.

As application requirements increase, you can expand your server with an additional processor, additional memory, add-in boards and peripheral devices, and hard disk drives.

External View

The following figure shows the 3.5-inch disk model.

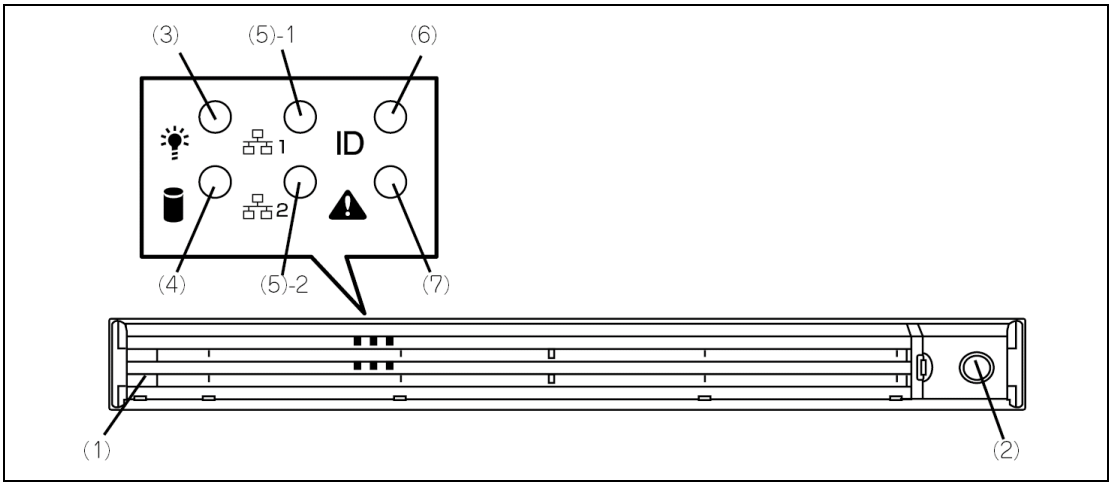


1 Top cover
Remove the top cover to install/remove DIMM, CPU, or PCI board.

2 Release buttons
Push these buttons to remove the top cover.

Front View with Front Bezel Closed

The following figure shows the location of the front system features.



1 Front bezel
The front bezel is a cover protecting the front devices during daily operation. A security key is provided to lock the cover.

2 Key slot
Insert the security key into this slot when unlocking the front bezel.

3 POWER LED (green)
This LED turns green when the power is turned on. It flashes while the server is in standby status.

4 DISK ACCESS LED (green/amber)
This LED is green during access to the internal hard disk drives. The LED turns amber when even one of the internal hard disk drives fails.

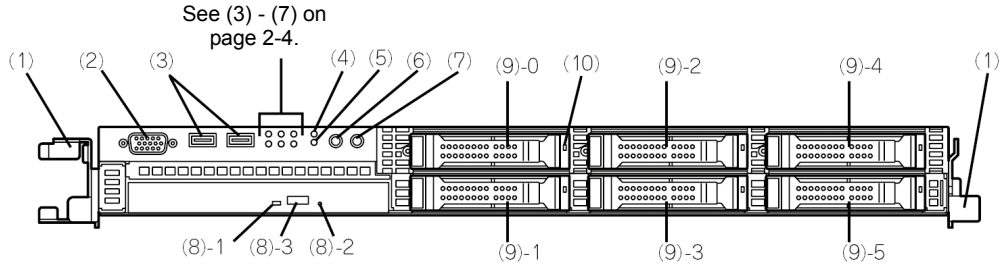
5 ACT LED (green)
This LED is on while the system is connected to the network. The number "1" on the icon indicates LAN port 1, and the number "2" indicates LAN port 2.

6 UID LED (blue)
This LED goes on when the UID switch is pressed. (The LED also goes on or flashes when software issues a command.)

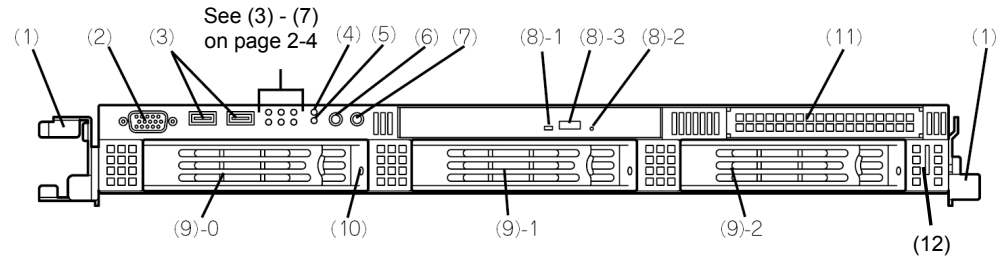
7 STATUS LED (green/amber) (on the front panel)
This LED indicates the server status. The LED is green during normal operation. The LED turns amber or flashes when the server enters the abnormal state.

Front View with Front Bezel Removed

2.5-inch disk model



3.5-inch disk model



1 Handles (1 at the right and left each)
Hold the handles when dismounting/mounting the server from/in the rack.

2 Monitor connector
Connect the display unit to this connector. Exclusively used with the one on the rear panel.

3 USB connectors (2 ports)
Connect device compliant with the USB interface to the connectors.

4 RESET switch
Press this switch to reset the server.

5 DUMP (NMI) switch
Press this switch to dump system memory.

6 POWER switch
Press this switch to turn on/off the power. Pressing the switch once turns on the power, and the POWER LED goes on. Pressing it again turns off the power. Keep pressing the switch for 4 seconds or more forcibly turns off the power.

7 UID (Unit ID) switch
Press this switch to turn on/off the UID LEDs on the front and rear panels of the server. Pressing the switch once turns on the LEDs. Pressing it again turns them off.
(The LED also goes on or flashes when software issues a command.)

8 Optical disk drive (optical disk drive)
This drive reads data from the disc.
8-1 Disk access LED **8**-2 Emergency hole **8**-3 Tray eject button

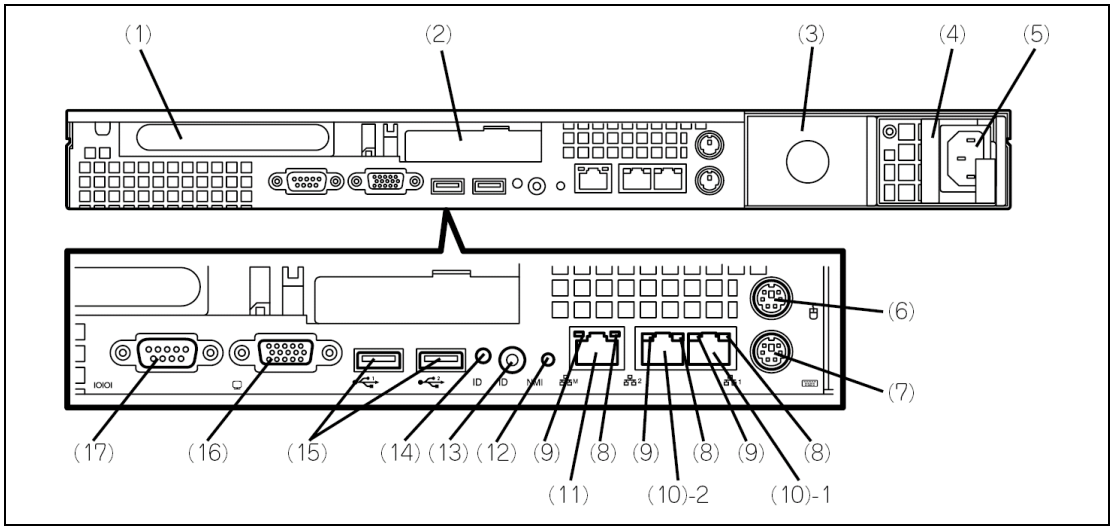
9 Hard disk drive bays
Mount hard disk drives in the bays. The last digit indicates the channel number. The hard disk drives must be purchased separately.
3.5-inch disk model: up to 3 drives
2.5-inch disk model: up to 6 drives

10 DISK LED (green/amber)
Hard disk drive LED. Each hard disk drive LED is green during access to the hard disk drive. The LED turns amber when the hard disk drive fails. The LED flashes switching back and forth between green and amber during build processing (only in RAID System).

11 Floppy disk drive bay
Install an optional floppy disk drive or a battery for RAID Controller in this slot. They are mutually exclusive.

12 Slide tag
A label indicating the N code and serial number of the server is attached.

Rear View



1 Full-height PCI board slot (1B)
Mount PCI board of the full-height type in the slot.

2 Low-profile PCI board slot (1C)
Mount PCI board of the low-profile type into this slot.
NOTE: If an additional LAN board is installed, it is hard to push the catch of the connector with your finger that is connected to the LAN board. Disconnect the connector pushing the catch with a standard screwdriver. At this time, be very careful for the screwdriver not to damage the LAN board.

3 Blank panel (for additional power supply unit)
Install an optional power supply unit in this slot.

4 Power supply unit
Factory-installed power supply unit

5 AC inlet
Connect the power cord to this socket.

6 Mouse connector
Connect the mouse to this connector.

7 Keyboard connector
Connect the keyboard to this connector.

8 LINK/ACT LED (green)
This LED indicates the access status of the LAN.

9 Speed LED (green/amber)
This LED indicates the transmission speed of the LAN.

10 LAN connectors
Connect network systems on the LAN to the connectors (1000BASE-T/100BASE-TX/10BASE-T).
The number "1" following the parenthesized number indicates LAN port 1, and the number "2" indicates LAN port 2.
If [Shared BMC LAN] is set to [Enabled] on BIOS SETUP, the LAN port 2 can be used as management LAN not only used as transmission port. However, it is not recommended in consideration of performance and security, because the LAN port 2 may receive both normal data and management data.

11 Management LAN port
100BASE-TX/10BASE-T interface port used to manage the server via LAN.

12 DUMP (NMI) switch
Press this switch to dump system memory.

13 UID switch
Press this switch to turn on/off the UID LEDs on the front and rear panels of the server. Pressing the switch once turns on the LEDs. Pressing it again turns them off.

14 UID LED (blue)
This LED goes on when the UID switch is pressed. (The LED also goes on when software issues a command.)

15 USB connectors
Connect device compliant with the USB interface to this connector.

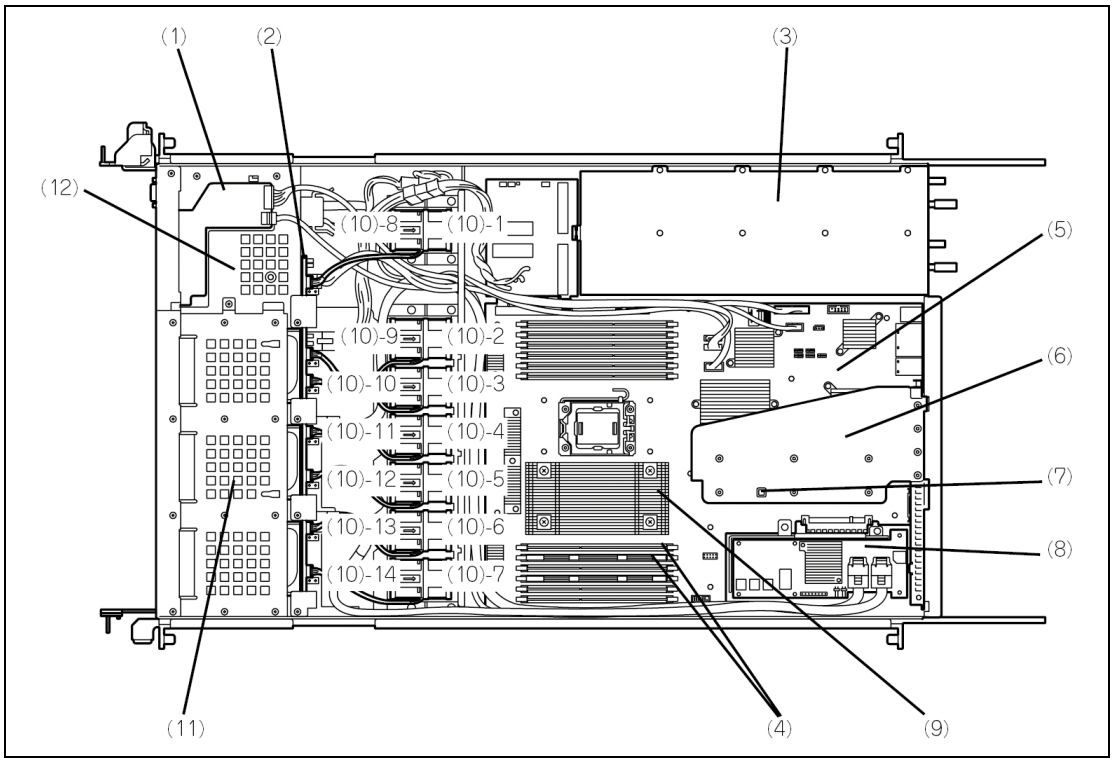
16 Monitor connector
Connect the display unit to this connector. Exclusively used with the one on the front panel.

17 Serial port (COM) connector
Connect device having a serial interface to this connector.
A leased line cannot be connected directly to this connector.

Internal View

The internal view for each models show below. The processor air duct factory-installed in the system is omitted for clarity.

2.5-inch Disk Model

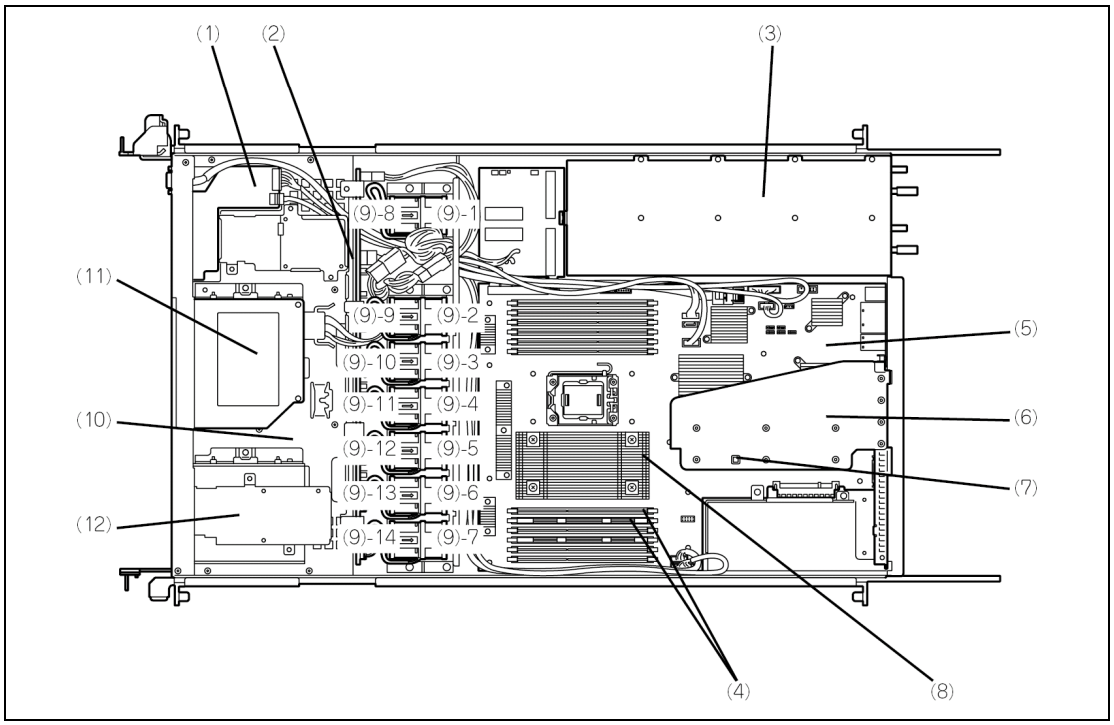


1 Front panel board
2 Backplane
3 Power supply
4 DIMM
5 Mother board
6 PCI riser card
7 Top cover open sensor
8 RAID controller (equivalent to N8103-116A)
9 Processor (mounted under the heat sink)
10 Cooling fans

10-1 FAN1R	10-2 FAN2R	10-3 FAN3R	10-4 FAN4R
10-5 FAN5R	10-6 FAN6R	10-7 FAN7R	10-8 FAN1F
10-9 FAN 2F	10-10 FAN3F	10-11 FAN4F	10-12 FAN5F
10-13 FAN6F	10-14 FAN7F		

11 Hard disk drive bays
12 Optical disk drive

3.5-inch Disk Model

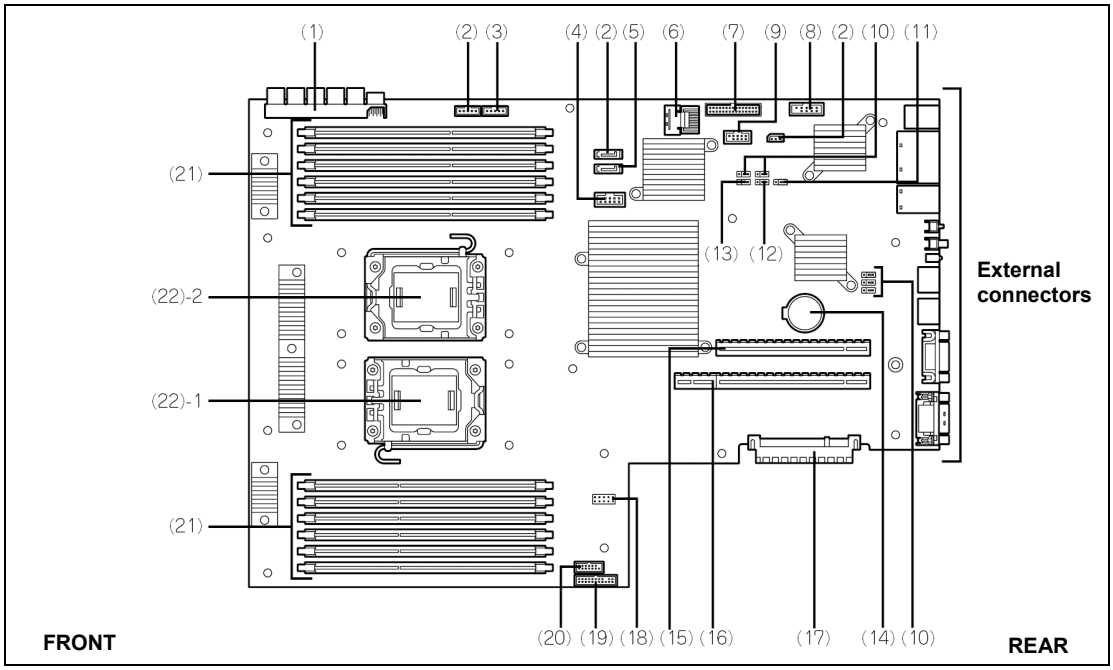


1 Front panel board
2 Backplane
3 Power supply
4 DIMM
5 Mother board
6 PCI riser card
7 Top cover open sensor
8 Processor (mounted under the heat sink)
9 Cooling fans

9-1 FAN1R	9-2 FAN2R	9-3 FAN3R	9-4 FAN4R
9-5 FAN5R	9-6 FAN6R	9-7 FAN7R	9-8 FAN1F
9-9 FAN 2F	9-9 FAN3F	9-11 FAN4F	9-12 FAN5F
9-13 FAN6F	9-14 FAN7F		

10 Hard disk drive bays
11 Optical disk drive
12 Floppy disk drive bay
Install an optional floppy disk drive in this bay

Mother Board



1 Power connector
2 Unused connector
3 USB FDD connector
4 USB connector (front)
5 SATA DVD connector
6 SATA HDD connector
Used only when 3.5-inch SATA2 hard disk drive is installed.
7 Fan connector
8 Option COM connector
9 HDD BP connector
10 Unused jumper switch
11 CMOS clear jumper switch
12 Password clear jumper switch
13 RAID configuration jumper switch
With 2.5-inch disk model, leave the factory setting as is.
14 Lithium battery
15 Connector for PCI riser card slot (for low-profile board)
16 Connector for PCI riser card slot (for full-height board)
(See Chapter 9 for available board.)
17 Connector for RAID controller
18 USB memory module connector
19 Front panel connector
20 Front video connector
21 DIMM sockets
22 Processor sockets
22-1 Processor #1 (CPU#1) 22-2 Processor #2 (CPU#2)

STATUS INDICATORS

This section explains the indication and meanings of the server LEDs.

POWER LED ( )

The POWER LED is on (green) while the server is being powered. It is off while no power is supplied to the server. It flashes while the server is in standby status.

STATUS LED ( )

The STATUS LED is on (green) while the server is operating normally. If the STATUS LED is off or turns amber and flashes, it indicates that the server is in abnormal state.

The table below explains the STATUS LED indication, the meanings, and the procedures.

NOTES:

- If NEC ESMPRO is installed, you can confirm the cause of a failure by referring to the error log.
- If shutdown processing can be performed through the operating system when you want to restart the system after turning the power off, restart the system by performing shutdown processing. If shutdown processing cannot be performed, restart the system by resetting, forcibly turning the power off, or disconnecting and then connecting the power cord.

STATUS LED indication	Description	Procedure
On (green)	The server is operating normally.	–
Flashing (green)	• The server is operating with the memory in degraded state. • An uncorrectable memory error has often occurred.	Identify the device in degraded state by using the BIOS setup utility "SETUP," and replace it as soon as possible.
Off	The power is off.	–
	POST is in progress.	Wait for a while. The STATUS LED turns green when POST is completed.
	A CPU error occurred. (IERR)	Turn the power off and then turn it on. If the POST screen displays an error message, take notes of the message, and contact your sales representative.
	A CPU temperature alarm was detected.	
	A timeout occurred when the time set for the watchdog timer arrived.	
	A CPU bus error occurred.	
	A memory dump request is made.	Wait until the memory dump is completed.
On (amber)	A temperature alarm was detected.	Check if the internal fans are clean and if the fan units are firmly connected. If the STATUS LED indication does not change when the fans are normal, contact your sales representative.
	A voltage alarm was detected.	Contact your sales representative.
	All the power supply units failed.	
	A temperature alarm was detected on chipset.	
Flashing (amber)	Either of the following was detected in the redundant power configuration: • AC power not supplied to one of the two power supply units • Failure of one of the two power supply units	Connect the power cord to supply power. If the power supply unit is faulty, contact your service representative.
	A fan alarm was detected.	Check if the fan units are firmly connected. If the STATUS LED indication does not change when the fans are normal, contact your sales representative.
	A temperature warning was detected.	Check if the internal fans are clean and if the fan units are firmly connected. If the STATUS LED indication does not change when the fans are normal, contact your sales representative.
	A voltage warning was detected	Contact your service representative.
	An error was detected on either of the hard disk drives.	
	Detected that the top cover is open.	Check if the top cover is open or not.

DISK ACCESS LED ( )

The DISK ACCESS LED indicates the status of the hard disk drive mounted in the 3.5-inch disk bay.

The LED turns green each time access is made to the hard disk drive.

When the DISK ACCESS LED turns amber, it indicates that a hard disk drive failure has occurred. Check the hard disk drive LED for the status of the failing hard disk drive.

ACT LED ( )

The ACT LED is green while the server is connected to the LAN. The LED flashes while the server is accessed via the LAN (during transmission/reception of packets). The number next to the icon indicates the network port number on the rear panel of the server.

UID LED (UID)

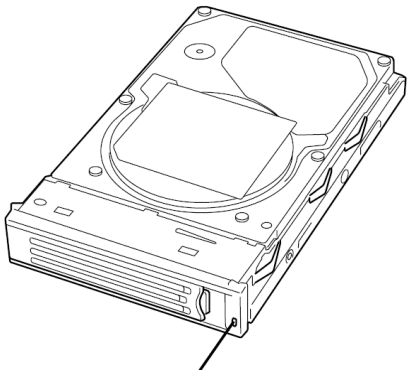
Pressing the UID switch toggles the front panel UID LED (blue) and the mother board UID LED on and off. The mother board UID LED is visible through the rear of the chassis and allows you to locate the server you're working on from the rear of the servers on a rack.

Disk Access LED

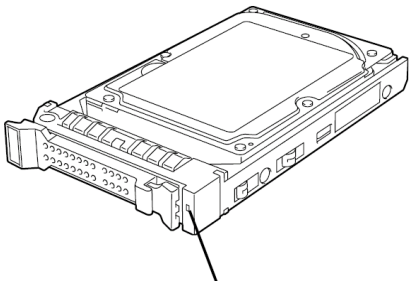
The disk access LED of the optical disk drive is on while the drive is accessed.

Hard Disk Drive LED

The disk LED located on the drive carrier indicates the following depending on the status:



3.5-inch hard disk drive



2.5-inch hard disk drive

- Flashing (green)

  The LED indicates that the hard disk drive is accessed.

- On (amber)

  The LED indicates a failure of a hard disk drive mounted in RAID System.

  NOTE: Even if one (two hard disk drives in RAID6) of the hard disk drives fails in Logical Drive (RAID1, RAID5, or RAID6), the server can continue operation. However, replace the hard disk drive as soon as possible, and perform reconstruction (rebuild) processing. (The failing hard disk drive can be replaced in hot swap mode.)

- Flashing switching back and forth between green and amber

  The LED indicates that reconstruction (rebuild) processing is being performed for the hard disk drive. (This flashing does not indicate a failure.) When a failing hard disk drive is replaced in RAID System, the system automatically rebuilds the data. (Auto-rebuild function) The LED switches back and forth between green and amber during rebuild processing.

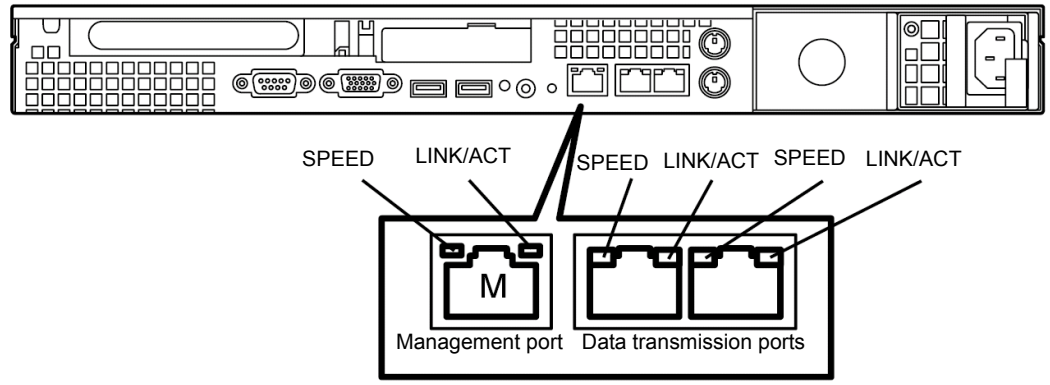
  The LED goes off when the rebuild processing has terminated. It turns amber when the rebuild processing fails.

IMPORTANT: If the server is turned off during rebuild processing, the processing is stopped. Restart the server, mount the new hard disk drive in hot swap mode, and then perform rebuild processing again. Observe the following notes on using the auto-rebuild function.

- Do not turn the power off. (Once the power is turned off, the auto-build function does not start.)
- Let 90 seconds or more pass between when dismounting a failing hard disk drive and when mounting the new one.
- Do not replace a failing hard disk drive while rebuild processing is being performed for another hard disk drive.

LAN Connector LEDs

There are two LEDs for each of the two LAN ports (connectors) on the rear panel.



- LINK/ACT LEDs

  Each LINK/ACT LED indicates the status of the standard network port of the server. While power is supplied to the server and HUB and the connection is correct, the LED is on (green). The LED turns green and flashes while the network port is transmitting/receiving data.

  If the LED does not go on when the LINK state is placed, check if the network cable is in normal state and if it is connected correctly. If the LED does not go on yet when the network cable is normal, the network (LAN) controller may be faulty. In this case, contact your sales representative.

- Speed LEDs (for data transmission ports)

  This LED indicates whether each of the network ports normally equipped with the server is operated through the 1000BASE-T, 100BASE-TX or 10BASE-T network interface. If the LED is lit amber, the network port is operated through 1000BASE-T. If the LED is lit green, the network port is operated through 100BASE-TX. If the LED is off, the network port is operated through 10BASE-T.

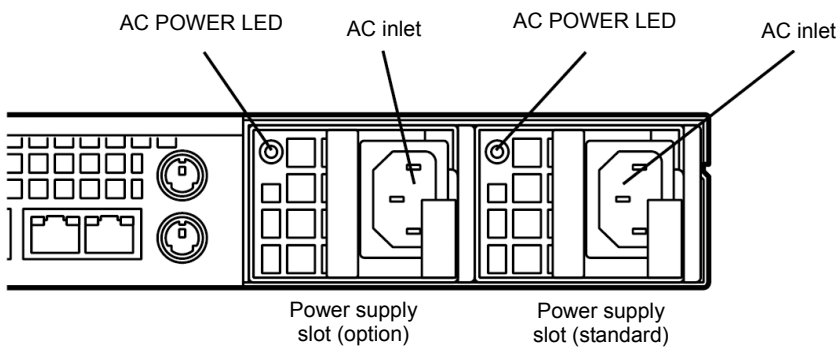
- Speed LED (for management port)

  This LED indicates whether each of the network ports normally equipped with the server is operated through the 100BASE-TX or 10BASE-T network interface. If the LED is lit green, the network port is operated through 100BASE-TX. If the LED is off, the network port is operated through 10BASE-T.

AC POWER LED

There is an AC POWER LED for the power supply unit on the rear. The LED turns green and flashes when the power supply unit receives AC power from the power cord, which is connected to the AC inlet. (Flashing amber indicates no AC power is received in any one of two power supplies in the redundant configuration.)

The LED turns green when the server power switch is turned on. If the LED does not go on when the server power switch is turned on or if it turns amber, the power supply unit is probably faulty. In this case, contact your service representative to replace the power supply unit.

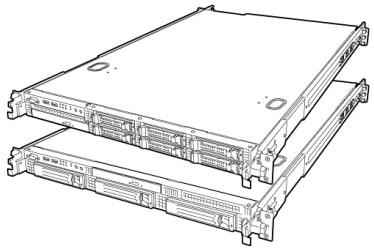


NOTE: If one power supply unit fails while an optional power supply is mounted, the system can continue operation with the other power supply unit (redundant function). The failing power supply unit can be replaced in hot swap mode (with the power on) without the system being stopped.

STANDARD FEATURES

High performance

- Intel® Xeon® Processor
  N8100-1511F/1516F : 1.86GHz
  N8100-1512F/1517F : 2GHz
  N8100-1513F/1518F : 2.26GHz
  N8100-1514F/1519F : 2.66GHz
  N8100-1515F/1520F : 2.93GHz
- High-speed memory access (DDR3 1066)
- High-speed network interface
  (1000Mbps/100Mbps/10Mbps supported)
- High-speed disk access
  (SATAII 300/Serial Attached SCSI) *1



Expandability

- PCI Express 2.0 (x16): 1 slot (full height)
  PCI Express 2.0 (x4): 1 slot (low profile)*2
  PCI Express 2.0 (x4): 1 slot (Dedicated to RAID Controller) *2
- Can be changed to PCI-X slot by using the optional riser card.
- Large memory of up to 96GB
- Up to two multi-processors are available for upgrade.
- Three network ports (one for management LAN)
- Hard disk drive bays
  3.5-inch disk model: up to 3 hard disk drives
  2.5-inch disk model: up to 6 hard disk drives
- One backup file bay
- USB2.0 interface

Management Utilities

- NEC ESMPRO
- RAID System Management Utility (Universal RAID Utility)
- Hard disk drive monitoring feature

Maintenance Features

- Off-line Maintenance Utility
- Memory dump feature using the DUMP switch

Power saving and noiseless design

- Power monitoring feature
- Power control feature
- High-efficiency power supply supporting 80 PLUS®
- Fan control appropriate to environment, work load, and configuration
- Noiseless design

High-reliability

- Memory monitoring feature (error correction/error detection)
- CPU/memory degradation feature (logical isolation of a failed device)
- Memory x4/x8 SDDC feature
- Memory mirroring/LockStep feature (x8 SDDC)
- Bus parity error detection
- Temperature detection
- Error notification
- Internal fan monitoring feature
- Internal voltage monitoring feature
- Redundant power supply (hot-swap)
- Onboard RAID Controller (LSI Embedded MegaRAID)
  Internal RAID Controller (equivalent to N8103-116A)
- Auto-rebuild feature (hot-swappable)
- BIOS password feature
- Mechanical security lock
- Redundant fans

Many Available Features

- Redundant power supply feature (with optional power supply unit installed)
- El Torito Bootable CD-ROM (no emulation mode) format support
- POWER switch mask
- Software power-off
- Remote power-on feature
- AC-Link feature
- Remote console feature
- Front monitor connector

Self-diagnosis

- Power On Self-Test (POST)
- Test and Diagnosis (T&D)

Easy and Fine Setup

- NEC EXPRESSBUILDER (system setup utility)
- Parameter File Creator
- SETUP (BIOS configuration utility)

*1 2.5-inch disk model server supports SAS hard disk drive only
*2 Connector for 8-lane is used.

Remote Management Feature

Server management is concentrated in the Remote Management Controller (RMC). The RMC and associated circuitry are powered from a 5Vdc standby voltage, which remains active when system power is switched off, but the ac power source is still on and connected.

The RMC supports the NEC ESMPRO Manager, which allows remote server management through networks. Events monitored by the manager system include over-temperature and over-voltage conditions, fan failure, or chassis intrusion.

Information on NEC ESMPRO Manager may be found in the NEC EXPRESSBUILDER DVD.

One major function of the RMC is to autonomously monitor system management events, and log their occurrence in the nonvolatile System Event Log (SEL). The events being monitored include overtemperature and overvoltage conditions, fan failure, or chassis intrusion. To enable accurate monitoring, the RMC maintains the nonvolatile Sensor Data Records (SDRs), from which sensor information can be retrieved. The RMC provides an ISA host interface to SCR sensor information, so that software running on the server can poll and retrieve the server's current status.

The RMC performs the following:

- Monitors server board temperature and voltage*
- Monitors processor presence and controls Fault Resilient Boot (FRB)
- Detects and indicates baseboard fan failure*
- Manages the SEL interface
- Manages the SDR Repository interface
- Monitors the SDR/SEL timestamp clock
- Monitors the system management watchdog timer
- Monitors the periodic SMI timer
- Monitors the event receiver
- Controls secure mode, including video blanking, diskette write-protect monitoring, and front panel lock/unlock initiation
- Controls Wake On LAN via Magic Packet support.
- Monitors the hard disk drives
- Verifies system configuration data (CPU, memory, and others)

*Also, NEC ESMPRO supports these features.

NOTE: To use the Remote Management Extended License (N8115-03), visit our Web site to see the latest information about remote console/remote media feature.

Degradation Feature

The degradation feature automatically isolates a failed DIMM or processor to assure continuous operation of the server when the POST (Power On Self-Test, self-diagnosis program after power on) detects such a DIMM or processor.

> **NOTE:** The degradation feature is only available when at least two DIMMs or processors are installed.

Failed DIMMs and processors may be identified on the screen that the POST displays, or with the BIOS setup utility of the server, "SETUP." They may also be identified on the system that has the NEC ESMPRO installed.

Memory RAS Features

Your server board has the memory mirroring and LockStep features. For detail explanation, refer to Chapter 9.

Remote Power-On Feature (Wake On LAN)

The remote power-on function turns on the server through a network. It sends a special packet from the management computer to a remote server to turn it on if the server is off-powered.

To enable this feature, use the BIOS setup utility, "SETUP." (See Chapter 4.)

The remote power-on feature is not available in the following cases. Press the POWER switch once to start the OS, and turn off the server in an appropriate procedure.

- Abnormal previous system shut-down
- No power supply to the server (due to turned-off breaker, disconnected power cord, power blackout, etc.)

AC-Link Feature

When the power cord of the server is connected to an uninterruptible power supply (UPS) unit, the server supports the power linkage feature that enables control over the power supply from the UPS to the server. The AC-Link feature can be enabled or disabled with the Server menu of the BIOS setup utility, "SETUP." (See Chapter 4.)

System Security

To help prevent unauthorized entry or use of the system, the system includes a full lockable front bezel and Server Management software that monitors the front bezel intrusion switch.

Security with Mechanical Locks and Monitoring

To unlock the bezel, insert the key in the lock and turn the lock counterclockwise until it stops (about a quarter turn). The bezel is now unlocked and can be opened again.

To lock the bezel, insert the key in the lock. Turn the lock clockwise until it stops (about a quarter turn). The bezel is now locked and cannot be opened.

Software Locks via the BIOS SETUP Utility

The BIOS SETUP Utility provides a number of security features to prevent unauthorized or accidental access to the system. Once the security measures are enabled, you can access the system only after you enter the correct password(s). For example:

- Mask the power switch function after the power-on.
- Set and enable a supervisor password.
- Set and enable a user password.
- Disable access to the boot sector of the operating system hard disk drive.

Notes on Using Power Control Feature

Power consumption of the server can be controlled through command line interface of EXPRESSSCOPE Engine 2 (BMC) or NEC ESMPRO Manager. Using this feature to suppress the upper limit of power consumption, the larger number of servers can be installed in the site where the allowable power consumption is limited.

Refer to the User's Guide of EXPRESSSCOPE Engine 2 or NEC ESMPRO Manager for how to enable this feature.

Applicable OS

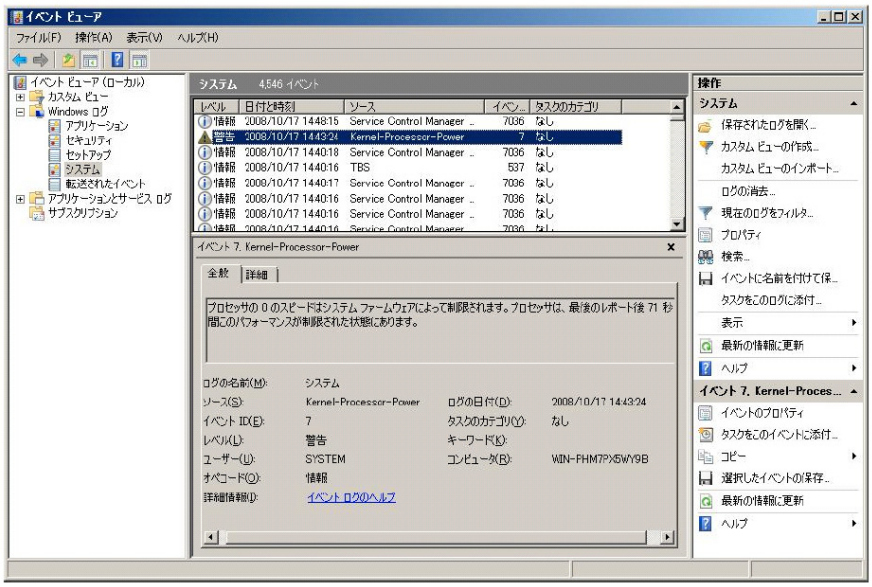
Power control feature uses P-State (Performance State) of processor that is defined in ACPI (Advanced Configuration and Power Interface). Thus, the OS must support P-State. The following OSs support the power control feature.

OS that supports power control feature

- Windows Server 2003, Standard Edition (SP1 or later)
- Windows Server 2003, Enterprise Edition (SP1 or later)
- Windows Server 2003 R2, Standard Edition
- Windows Server 2003 R2, Enterprise Edition
- Windows Server 2003 R2, Standard x64 Edition
- Windows Server 2003 R2, Enterprise x64 Edition
- Windows Server 2008, Standard
- Windows Server 2008, Enterprise
- Windows Server 2008, Standard x64
- Windows Server 2008, Enterprise x64
- Red Hat Enterprise Linux 5.3 or later
- Red Hat Enterprise Linux 5.3 or later (EM64T)

Notes on Using Windows Server 2008

The following event will be logged in Event Viewer if power control feature is used on Windows Server 2008. However, it is not the problem in operating the system, the event is logged because the P-State is controlled by the server side.



NEC EXPRESSBUILDER

The DVD of this server's accessories contains a setup utility called "NEC EXPRESSBUILDER".

The major functions of the NEC EXPRESSBUILDER are:

- To install the Operating System.

  "Express Setup" helps you to install the Windows Operating System. (See Chapter 5)

- To diagnose the server.

  NEC EXPRESSBUILDER includes System Diagnostics to check this server. (See Chapter 7)

- To create a driver disk.

  Use this function to create "OEM-disk for Windows" used for a manual installation of Windows. (See Appendix D-F)

- To update System BIOS

  Use this function to update the server's system BIOS or firmware. (See Chapter 8)

- To update Windows system*

  "Update the system" in the Autorun menu (See Chapter 6) updates the several drivers of Windows on the server.

- To install several management utilities*

  NEC EXPRESSBUILDER includes the management utilities (NEC ESMPRO, Universal RAID utility and so on). You can install the applications from NEC EXPRESSBUILDER.(See Chapter 6)

- To read several documents*

  You can refer to the documents from the Autorun menu. (See Chapter 6)

  * These functions are available on Windows system.

NOTE: Some features among those listed above can be used from the remote computer via cross cable (COM), or LAN. See Chapter 6 for details.

NEC ESMPRO

The NEC ESMPRO is server management software that runs on the OS. The NEC ESMPRO includes the NEC ESMPRO Manager for the server monitoring terminal and the NEC ESMPRO Agent for the server.

> **NOTE:** For details of major functions of the NEC ESMPRO, system configuration and setups with the NEC ESMPRO, see Chapter 6. Available functions of the NEC ESMPRO depend on the OS you install. Ask your service representative for details.

Maintenance Tools

The Maintenance Tools is used for maintenance and fault analysis of the server. This tool is usually used by the service representative.

See Chapter 8 for details.

SYSTEM DIAGNOSTIC UTILITY

The system diagnostic utility contained in the NEC EXPRESSBUILDER is useful to detect hardware failures. See Chapter 7 for details.

USING YOUR SERVER

This section describes basic operations of the server including how to use devices such as the optical disk drive. See Appendix B for notes on using the disc and accessories including the keyboard and the mouse.

Front Bezel

Remove the front bezel to power on/off the server, to access the optical disk drive and to install/remove hard disk drives to the 3.5-inch disk bays.

IMPORTANT:

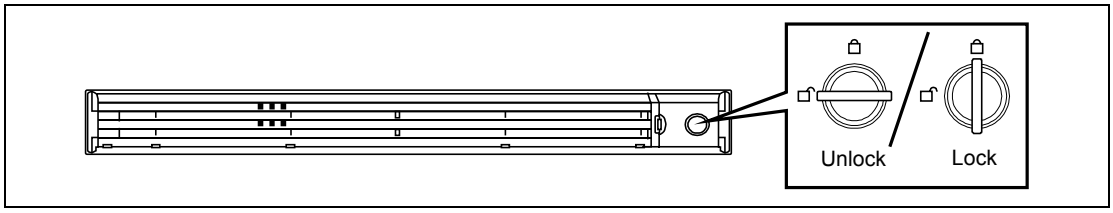
- To open the front door, you must unlock the door with the provided security key.
- Pay attention not to press the POWER switch when you install or remove the front bezel.

Installing or Removing the Front Bezel

When turning the power of the server on/off, accessing to the optical disk drive, or installing or removing a hard disk drive on or from the 3.5-inch disk bay, first remove the front bezel.

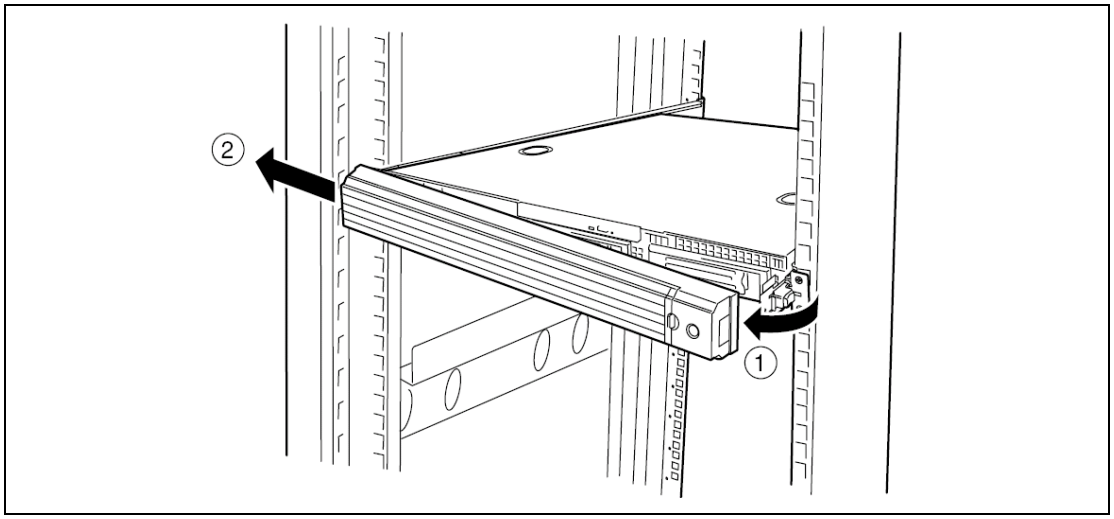
IMPORTANT: The front bezel can be opened only when you unlock it by using the attached security key.

1. Insert the attached security key into the key slot and turn the key to the front bezel side with it pressed lightly to release the lock.

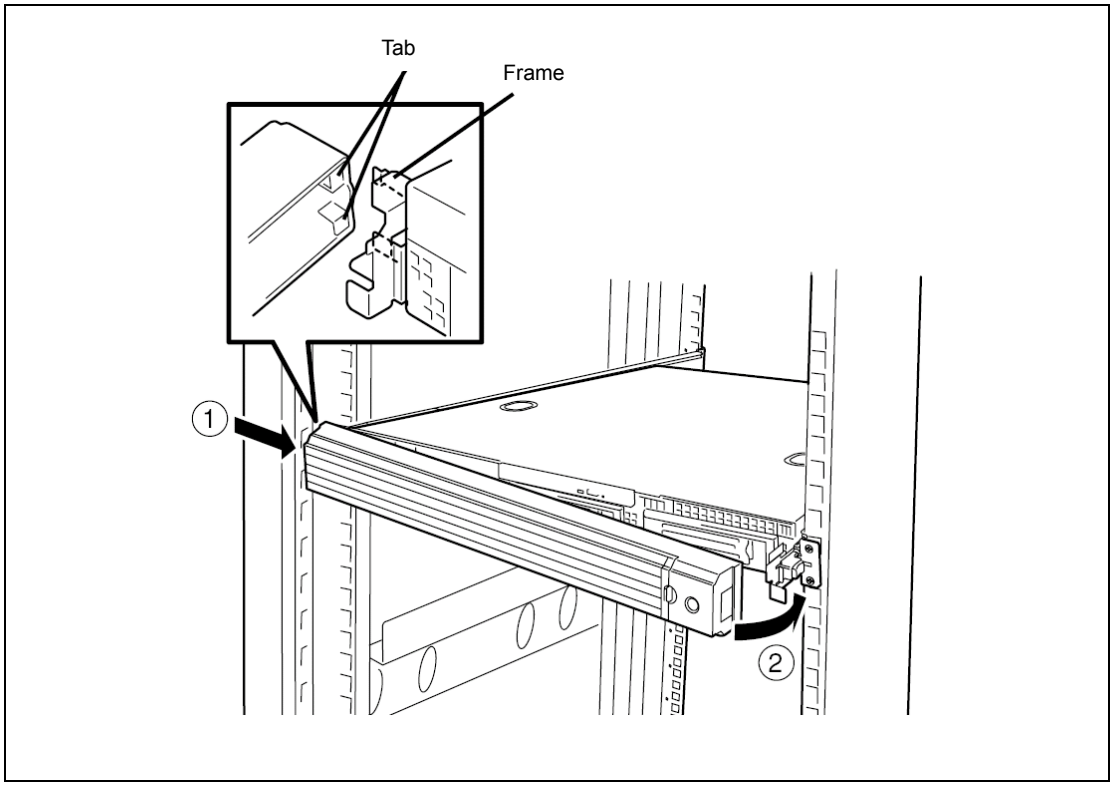


2. Hold the right end of the front bezel lightly to pull it toward you.

3. Slide the front bezel to the left a little to remove the tab from the frame and then remove the front bezel from the server.



To install the front bezel, latch the tab at the left side of the front bezel on the server frame. After the installation, lock the front bezel by using the key for security.



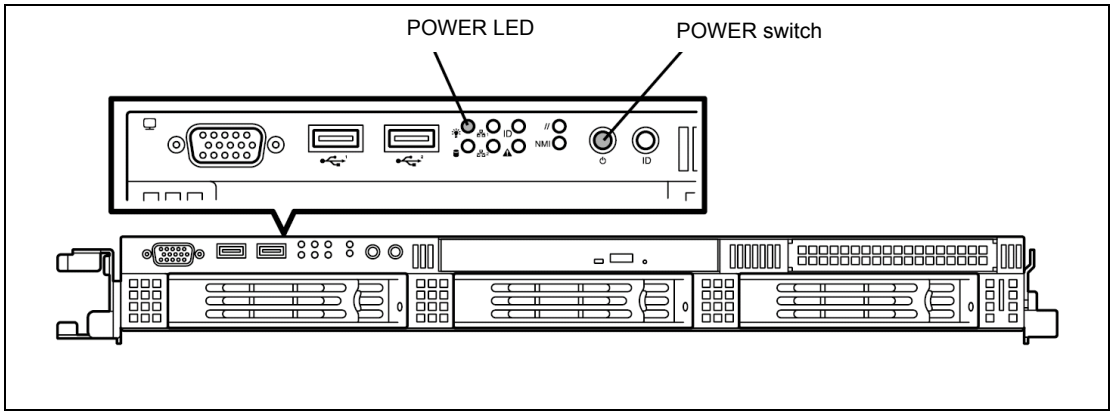
POWER Switch

Use the POWER switch to turn on/off the server.

Power On

Press the POWER switch on the front of the computer chassis.

The POWER LED lights in green.



IMPORTANT:

- If the power cord is connected to a power control device such as a UPS (Uninterruptive Power Supply), make sure that the power control device is powered.
- If the power cord is connected to the server, an initial diagnosis of the hardware starts. The POWER switch does not work while in diagnosis. Wait for about 30 seconds, then press the POWER switch.
- Always allow POST to complete before powering down your system.

POST

POST (Power On Self-Test) is the self-diagnostic program stored in the system memory.

When you power on the server, the system automatically runs POST to check the mother board, ECC memory module, CPU module, keyboard, and mouse. POST also displays messages of the BIOS setup utility, such as the start-up message, while in progress.

With the factory setup of the server, the NEC logo appears on the display unit while POST is in progress. (To display the POST check results, press **Esc**.)

> **NOTE:** You can set the POST check results to appear on the display unit without pressing **Esc**. To do so, select "Enabled" for "Boot-time Diagnostic Screen" under the Advanced menu of the BIOS SETUP utility.

The POST check results should be checked in the following cases.

- When the server is used for the first time.
- When the server appears to fail.
- When the server beeps for many times between power-on and OS start-up.
- When an error message appears on the display unit.

POST Execution Flow

The following describes the progress of POST in the chronological order.

IMPORTANT:

- Do not make key entries or perform mouse operations while POST is in progress.
- Some system configurations may display the message "Press Any Key" to prompt a key entry. This message is driven by BIOS of an installed optional board. Make sure to read the manual that comes with the optional board before any key entry.
- Powering on the server, after you installed or removed an optional PCI board or moved it to another slot, may display the message that indicates incorrect board configuration and suspend POST. In such a case, press **F1** to continue POST. Board configuration can be made using the utility described later.

1. After a few seconds from power-on, POST starts checking the memory. The count message of the basic and expansion memory appears at top left on the display unit screen. The memory check may takes a few minutes to complete depending on the memory size of the server. Also, it may take approximately one minute for the screen display to appear after rebooting the server.
2. Some messages appear upon completion of the memory check. These messages appear to indicate that the system has detected the CPU, baseboard management controller, keyboard, and mouse.
3. After a few seconds, POST displays the following message prompting you to launch the BIOS SETUP utility stored in the system memory of the server. This message appears at bottom left on the screen.

   ```
   Press <F2> to enter SETUP, <F12> to Network
   ```

   Launch the BIOS setup utility when you need to change the settings to meet the requirements for the server. As long as the above message is not displayed with an error message, you don't have to launch the utility. (Ignore the message. POST will automatically proceed.)

   To launch the SETUP utility, press **F2** while the above message is displayed. See Chapter 4 for setup and parameters.

   The server automatically restarts POST all over again when you exit the SETUP utility.

   The message "<F12> to Network" prompts you network booting (PXE boot). If you press **F12**, the POST searches for boot device on network.

4. <When 3.5-inch disk model server contains 3.5-inch SATA hard disk drive>

If your server uses Onboard RAID Controller, the following message is displayed to prompt you to run RAID utility.

```
Press <Ctrl><M> to Run LSI SoftwareRAID Configuration Utility
```

Press **Ctrl** + **M** to run the utility. For detail explanation, see Chapter 4 for detail.

IMPORTANT: The LSI Software RAID Configuration Utility is used to manage the data stored in hard disk drive, or for maintenance. See Chapter 4 for detail. This feature is unavailable for 2.5-inch disk model.

5. If the POST detects the optional add-in card, it display the message prompting you to launch the add-in card BIOS configuration utility. (Ignore the message. POST will automatically proceed a few seconds later.)

Refer to the manual that comes with the optional add-in card for detail.

6. If you set a password using the BIOS setup utility, SETUP, the password entry screen appears upon successful completion of POST.

Up to three password entries will be accepted. Three incorrect password entries disable the server to boot. In such a case, turn off the power and wait about 30 seconds before turning on to boot the server.

IMPORTANT: Do not set a password before installing an OS.

7. The OS starts when POST completes.

POST Error Messages

When POST detects an error, it displays an error message on the display unit screen. See Chapter 8 for POST error codes.

> **IMPORTANT:** Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

Power Off

Follow the procedure below to power off the server. If the power cord of the server is connected to a UPS, refer to the manual that comes with the UPS or the manual for the application that controls the UPS.

> **IMPORTANT:** Always allow POST to complete before turning off the server.

1. Shutdown the OS.
2. Press the POWER switch on the front of the server.
   The POWER LED goes off.
3. Power off peripheral devices.

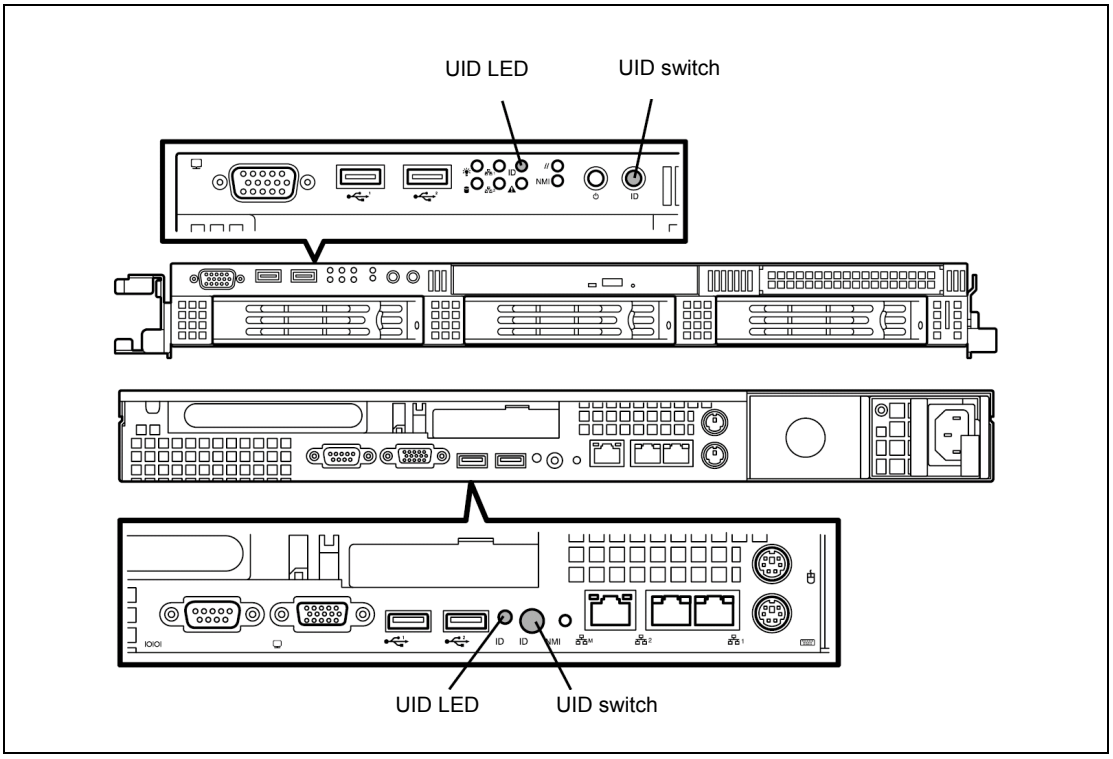
> **NOTE:** The standby feature of Windows Server is not available. Do not select "Standby" in Windows shutdown menu.

Identification of Servers ~ UID Switch ~

An "UID (Unit ID) LED" is provided on the front panel and rear panel. If more than one server is mounted in a single rack, the LED identifies the server you are going to maintain.

The UID LED goes on when the UID (Unit ID) switch on the front panel is pressed. It goes off when the switch is pressed again.

Maintenance from the rear of the rack has to be carried out in a dark, narrow space. The interface cable of a server or power supply unit in normal state may be disconnected by accident in this situation. To prevent this problem, you should start maintenance after confirming the target server by using the UID switch.



Optical Disk Drive

The server is provided with the optical disk drive on its front to read data from a disc.

⚠ CAUTION

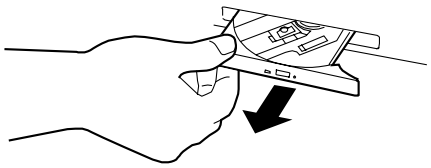
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

- Do not leave the tray ejected from the optical disk drive.

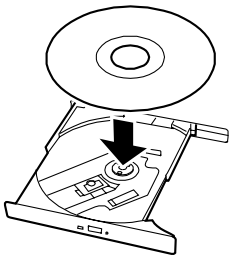
Set a disc on the optical disk drive in the following procedure.

1. Confirm that the power of the server is on (with the POWER LED being lit) before setting the disc on the optical disk drive.
2. Press the Eject button on the front of the optical disk drive.

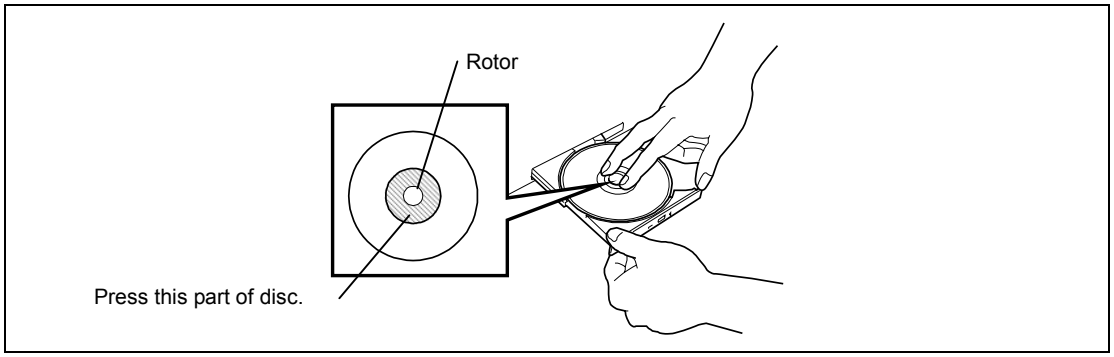
   The tray comes out a little.
3. Hold the tray lightly and pull it out toward you until the tray stops.



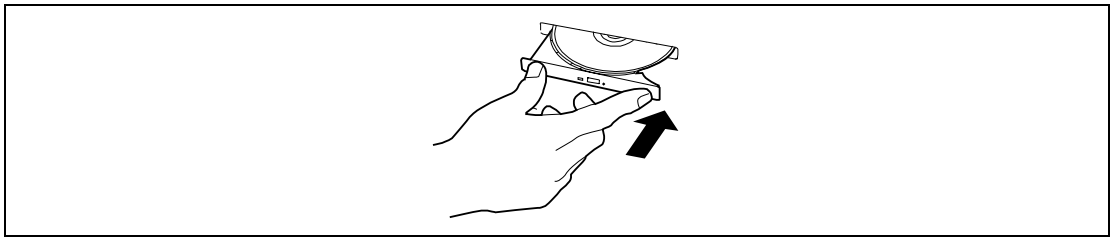
4. Put the disc on the tray carefully and securely with the character printed surface facing upward.



5. As shown in the figure below, hold the tray with a hand and press the disc with fingers of another hand to make the hole of the disc fit to the rotor at the center of the tray.

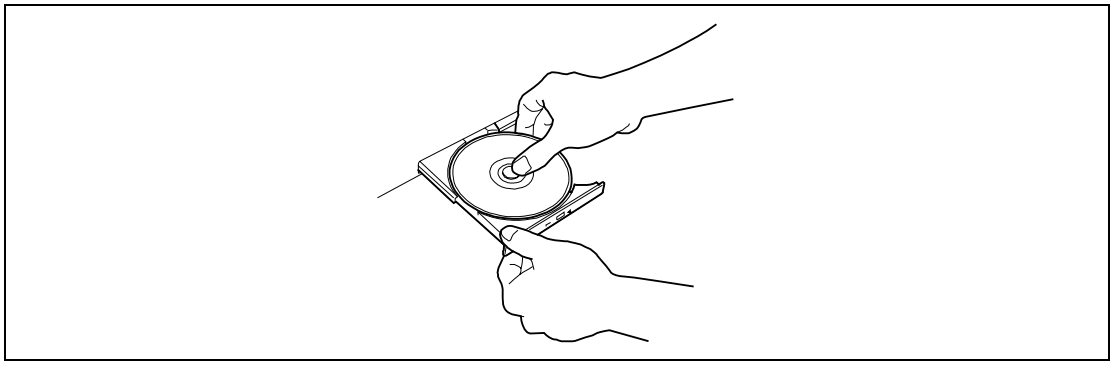


6. Push the front of the tray lightly to retract it into the drive.



IMPORTANT: If a noisy sound in driving the optical disk drive occurs after setting a disc, set it again correctly.

To take out the disc from the optical disk drive, press the Eject button in the similar way in setting the disc to make the tray go out.

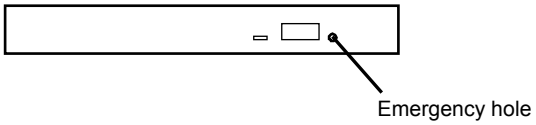


If the access LED is lit, the disc is being accessed. Confirm that the access LED is not lit before pressing the Eject button.

As shown in the figure below, hold the tray with a hand and take the end of the disc lightly by the fingers of another hand with the suppression of the rotor at the center of the tray to remove the disc from the tray.

After taking out the disc, return the tray into the drive.

When you fail to eject the tray with the Eject button and take out the disc from the server, follow the procedure below.



1. Press the POWER switch to power off the server. (The POWER LED goes off.)
2. Insert a metal pin of approximately 1.2 mm in diameter and 100 mm in length (a straightened large paper clip will make a substitute) into the emergency hole on the right front of the optical disk drive and gently push it in until the tray is ejected.

IMPORTANT:

- Do not use a toothpick or plastic stick that is easy to break.
- If the above procedure does not let you take out the disc, contact your service representative.

3. Hold the tray and pull it out.
4. Take out the disc.
5. Push the tray back into position.

NOTE: Use of the Disc

Keep the following notes in mind to use the disc for the server:

- For the disk which does not conform to the CD standard, the playback of such a disk with the CD drive is not guaranteed.
- Do not drop the disc.
- Do not place anything on the disc or bend the disc.
- Do not attach any label onto the disc.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the disc with its printed side upward and gently put it on the tray.
- Do not scratch the disc or write anything directly on it with a pencil or ball-point pen.
- Keep the disc away from cigarette smoke.
- Do not leave the disc in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the disc, wipe the disc from its center to edge with a dry soft cloth slowly and gently.
- Use the CD cleaner to clean the disc. Do not use record spray/cleaner, benzene, or thinner.
- Keep the disc in a disc case when not in use.
- If the disc emits large noise in the optical disk drive, remove the disc and insert it back again.

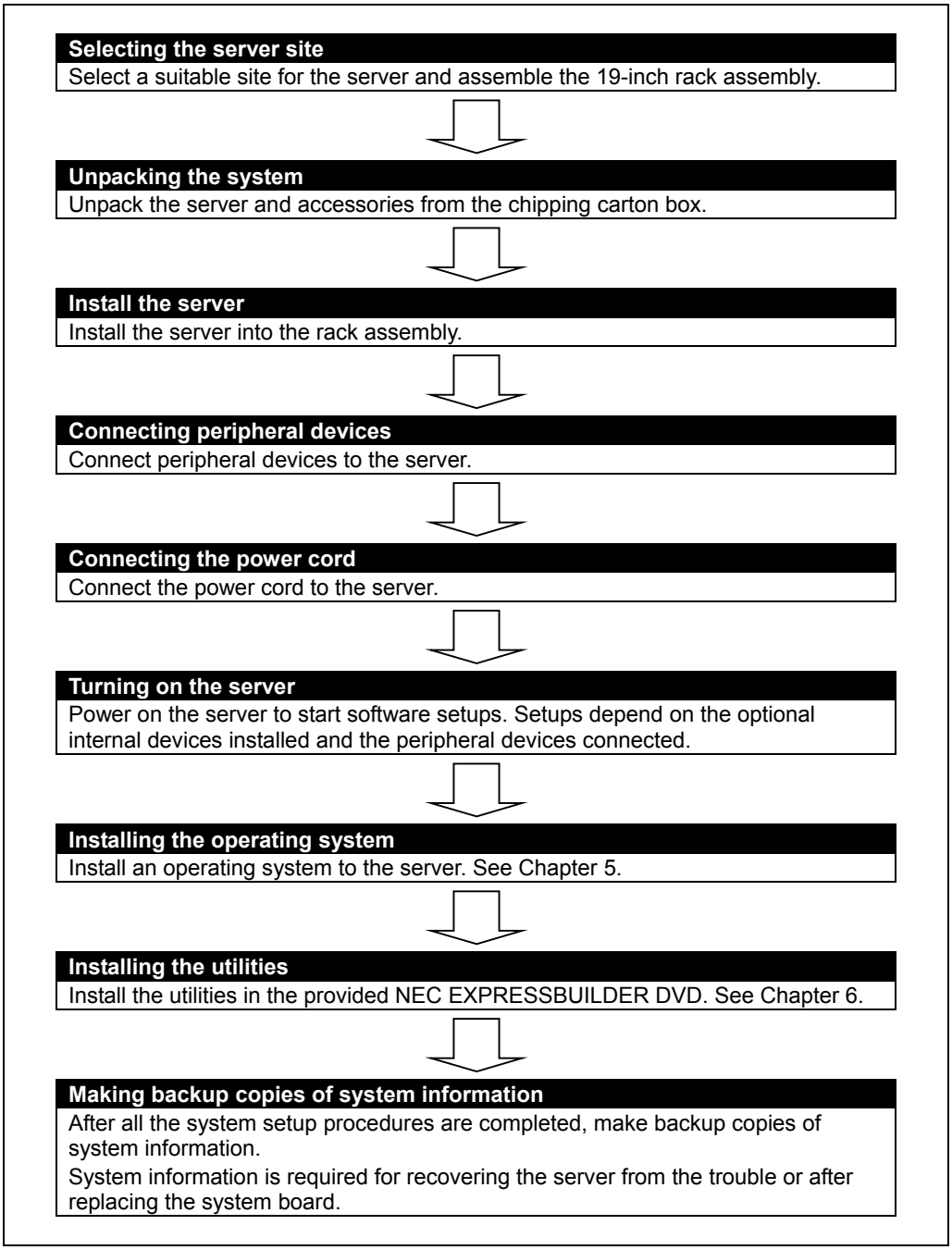
Chapter 3

Setting Up Your Server

This chapter describes how to set up the server appropriate for your system, on a step-by-step basis.

SETUP FLOW

Follow the flowchart below to set up the server.


Selecting the server site
Select a suitable site for the server and assemble the 19-inch rack assembly.
Unpacking the system
Unpack the server and accessories from the chipping carton box.
Install the server
Install the server into the rack assembly.
Connecting peripheral devices
Connect peripheral devices to the server.
Connecting the power cord
Connect the power cord to the server.
Turning on the server
Power on the server to start software setups. Setups depend on the optional internal devices installed and the peripheral devices connected.
Installing the operating system
Install an operating system to the server. See Chapter 5.
Installing the utilities
Install the utilities in the provided NEC EXPRESSBUILDER DVD. See Chapter 6.
Making backup copies of system information
After all the system setup procedures are completed, make backup copies of system information.
System information is required for recovering the server from the trouble or after replacing the system board.

SELECTING SERVER SITE

To use the server, install it on a standard EIA 19-inch rack assembly.

Refer to the documentation attached to the rack or contact your service representative for the installation of the server on the rack.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-12 for details.

- Do not use the server in any unapproved place.
- Do not connect the ground line to a gas pipe.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

- Do not carry or install the server only by a single person.
- Do not install the server where the load may be concentrated on a specific point.
- Do not install any component on the server only by a single person.
- Insert the hinge pins completely.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.
- Do not provide the wiring exceeding the rating power.
- Do not use the server in a place where corrosive gases exist.

Do not install the rack in the places listed below. Installing the rack or mounting the server on the rack in such a place may cause some malfunction to occur.

- Narrow space from which devices cannot be pulled out from the rack completely
- Place that cannot bear the total weights of the rack and devices mounted on the rack
- Place where stabilizers cannot be installed or where the rack can be installed only after the practice of proper earthquake-resistant construction
- Place of uneven or slanting floor
- Place of drastic temperature change (near a heater, air conditioner, or refrigerator)
- Place where intense vibration may be generated
- Place where corrosive gases (sulfur dioxide, hydrogen sulfide, nitrogen dioxide, chlorine, ammonia, ozone, etc) exist.
  Place where the air (or dust) includes components accelerating corrosion (ex. sulfur, sodium chloride) or conductive metals.
  Place where chemicals may be accidentally sprayed over
- Place where a carpet not subject to anti-static process is laid.
- Place where some objects may be fallen on the rack
- Place near a device generating intense magnetic field (such as a TV, radio, broadcast/communication antenna, power transmission wire, and electromagnetic crane) is placed (If unavoidable, contact your service representative to request proper shield construction.)
- Place where the power cord of the server must be connected to an AC outlet that shares the outlet of another device with large power consumption.
- Place near equipment that generates power noise (e.g., contact spark at power-on/power-off of commercial power supply through a relay). If you must install the server close to such equipment, request your service representative for separate power cabling or noise filter installation.

IMPORTANT: Increase in temperature within rack and air flow

If more than one server are installed on the rack or the ventilation within the rack is not enough, the temperature in the rack may be raised by the heat generated from the units to be higher than the operation temperature of the server (10 to 35°C).

It causes the server to operate improperly. Review the air flow within the rack or in the room and take sufficient measures so that the temperature within the rack does not exceed the warranted temperature range during the system operation.

The server takes in the air from the front and exhausts it to the rear.

INSTALLING THE SERVER

This subsection provides the instructions for installing the server into a rack cabinet. (This subsection also describes the removal procedures.)

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-12 for details.

- Do not use any rack which does not conform to the relevant standard.
- Always use the server in the specified place.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

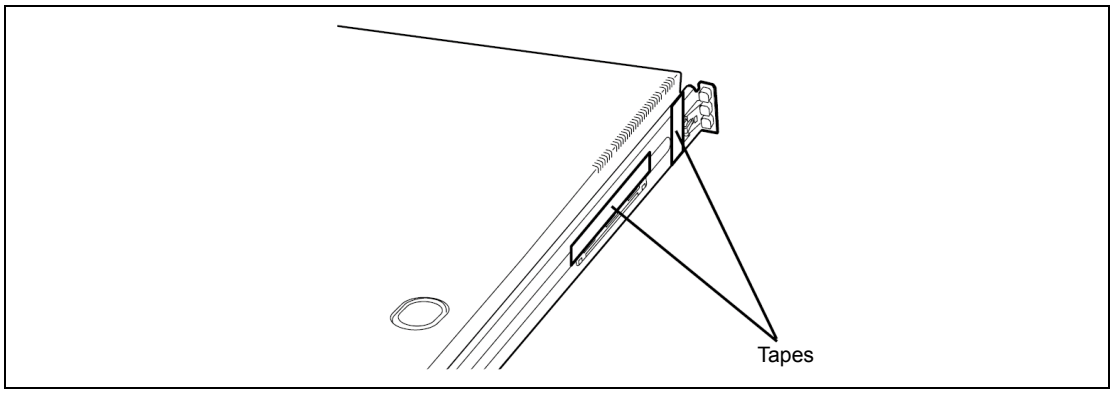
- Do not install/remove the server in/from the rack only by a single person.
- Do not install the server on the rack leaving the cover removed.
- Do not pinch your finger with mechanical components.
- Do not apply any load on the server being pulled out from the rack.

Installation

This server can be installed in either the NEC rack or a third vendor's rack. Take the following steps to install the server in the rack.

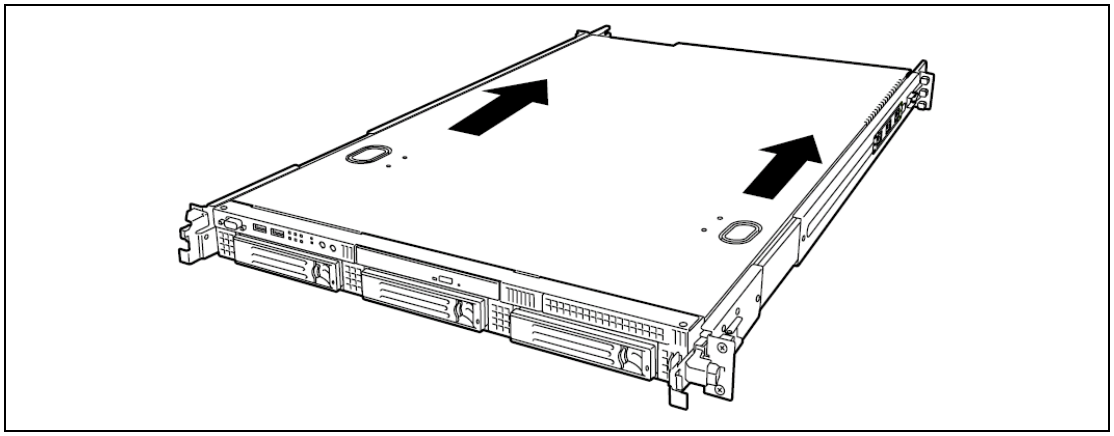
- Preparation for installation

  When shipped from factory, the left and right slide rails are fixed with tapes at the front and side faces to prevent from falling off during transportation. Peel off the tape before you install the server in the rack.

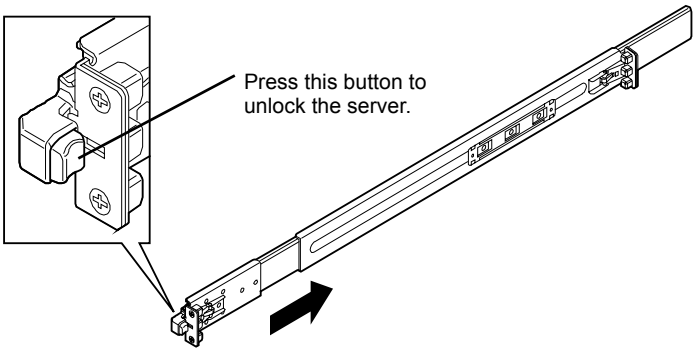


Removing rail assemblies

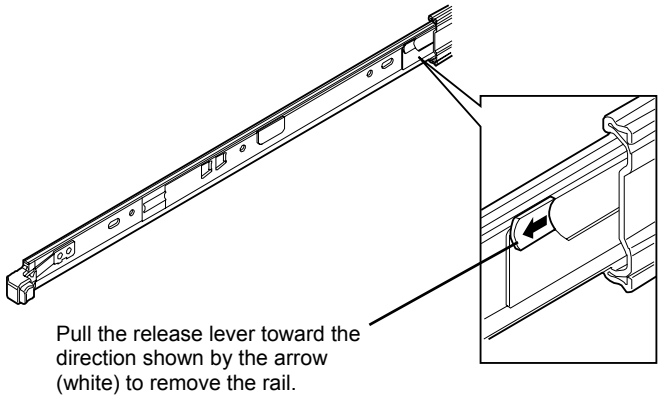
1. Remove the sliding rails from left and right sides of the server.



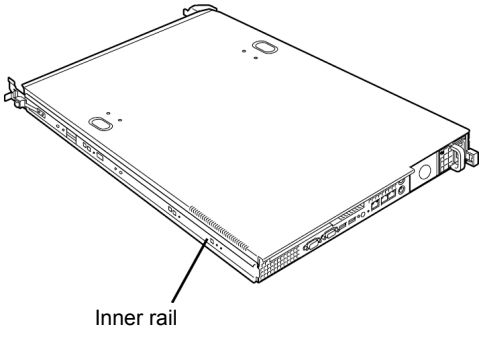
2. While pushing the unlock button on the front of the server, hold the rails and slowly move them toward the rear of the server.



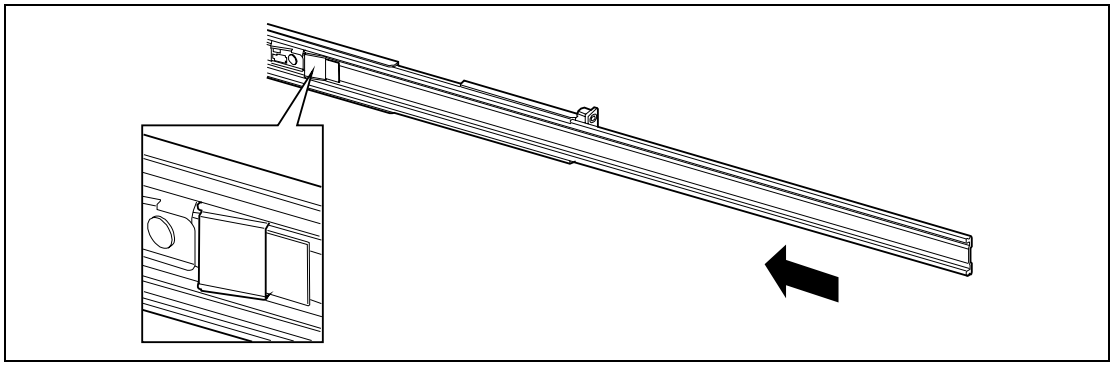
3. After a while, the rails are locked with clicking sound. Pull the release levers on the left and right sides of the server toward direction indicated by an arrow (white) in the figure, and remove them from the server while unlocking it.



4. Only the inner rails remain screwed to the server when the rail assemblies have been removed.



5. While pushing the levers, move the removed rail assemblies toward the direction indicated by an arrow in the figure, to restore the original position.



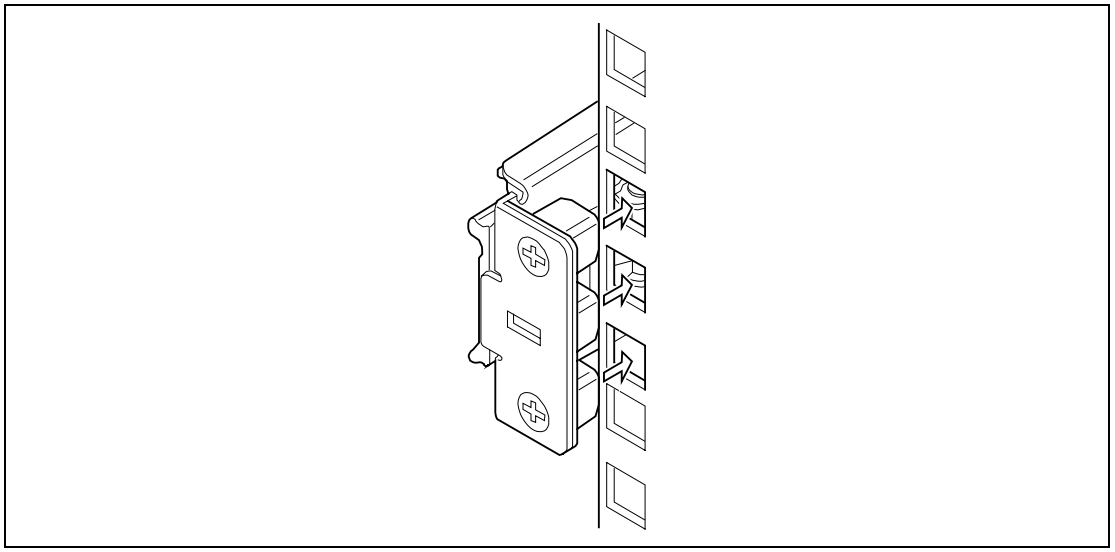
IMPORTANT:

- The removed rail assemblies are to be installed on the inner rails later.
- Be very careful not to get your finger caught in the levers or rails.

Installing Rail Assemblies

1. Insert the square projection of the rail assembly into the angle hole on the 19-inch rack until it is locked with clicking sound.

The figure below shows the right side (front) of the rack. Install the rail assemblies to the right side (rear), and left side (front and rear) of the rack in the same procedure.



Make sure that the rail assembly is installed at the same level as the other slide rail assembly already installed.

NOTES:

- There may be some backlashes in the front and rear, however, it is not a deficiency.
- Make sure that the rail assembly is surely locked to the rack.

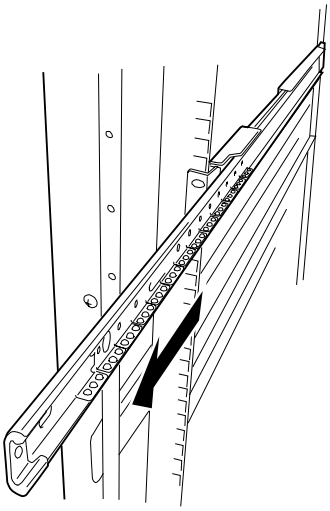
Installing the Server

⚠ CAUTION

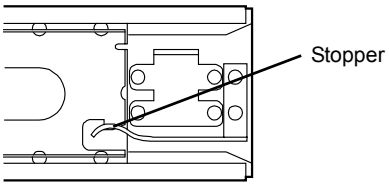
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

- Do not lift the server only by a single person.
- Do not pinch your finger with mechanical components.

1. Pull out the sliding rails of the right and left rail assemblies until they are locked.

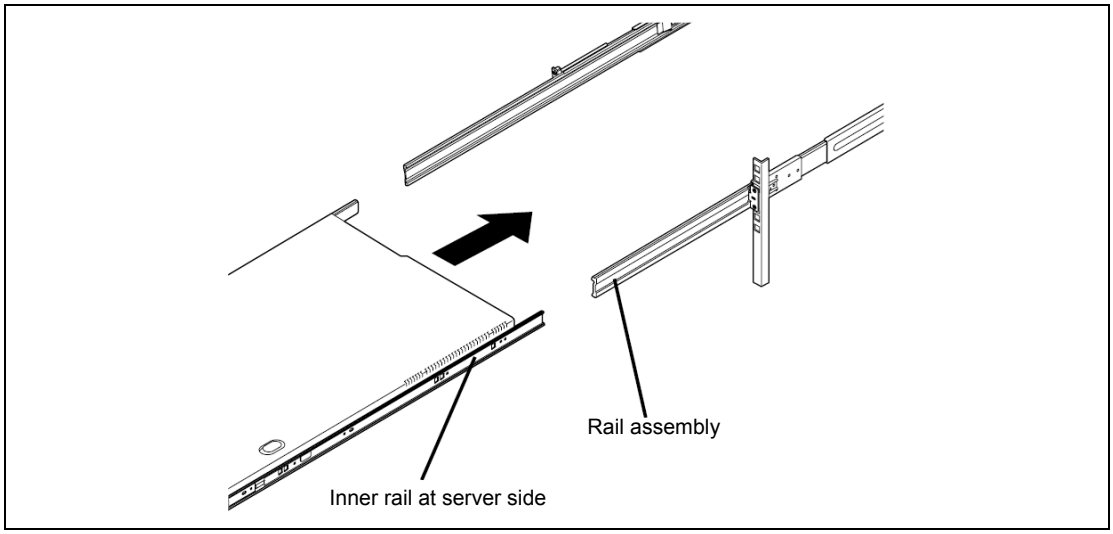


NOTE: Make sure that the sliding rails are surely locked by the stopper.



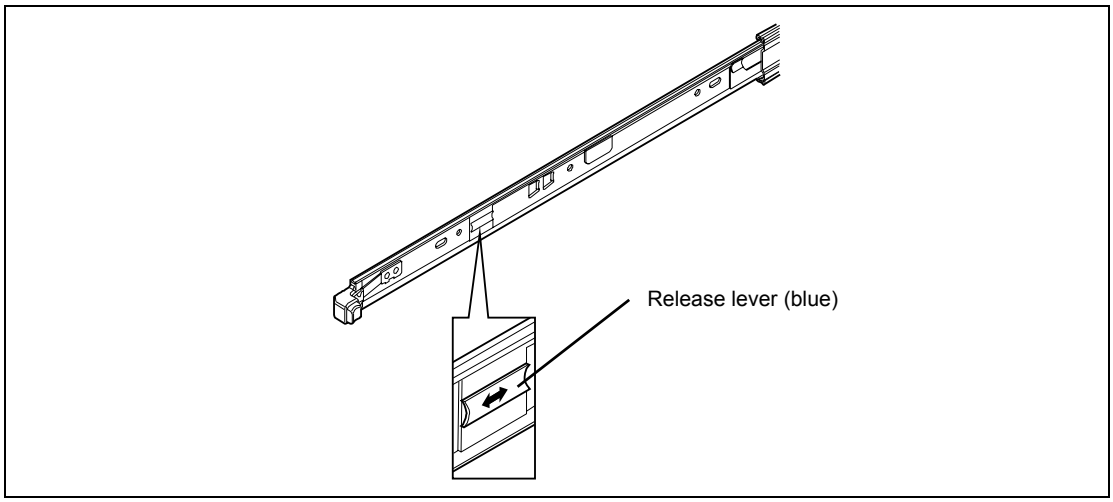
2. At least two persons are required to install the server. Securely hold the server and install it in the rack.

Firmly fit the inner rails on the sides of the server into the rail assemblies that are installed on the rack, and then slowly push the server into the rack.



3. If the server is locked on its way into the rack, slowly push it in while pressing the release levers (blue) on the right and left sides of the server.

When the server is completely pushed into the rack, the server is locked.



IMPORTANT:

- Be very careful not to get your finger caught in the levers or rails.
- Insert both sides of inner rails straight into the rack.
- Hold the thumbscrews on both sides of the server, and install the server carefully while making sure the installation position.

NOTES:

- At the first installation, you may feel strong friction in pushing because the mechanical components cannot be completely engaged with each other. Push the server intensely.
- If the installation is incomplete, either of rails may not go further on its way. In such a case, pull out the server completely until it is locked. Then, push the server in while unlocking the right and left sides of it.

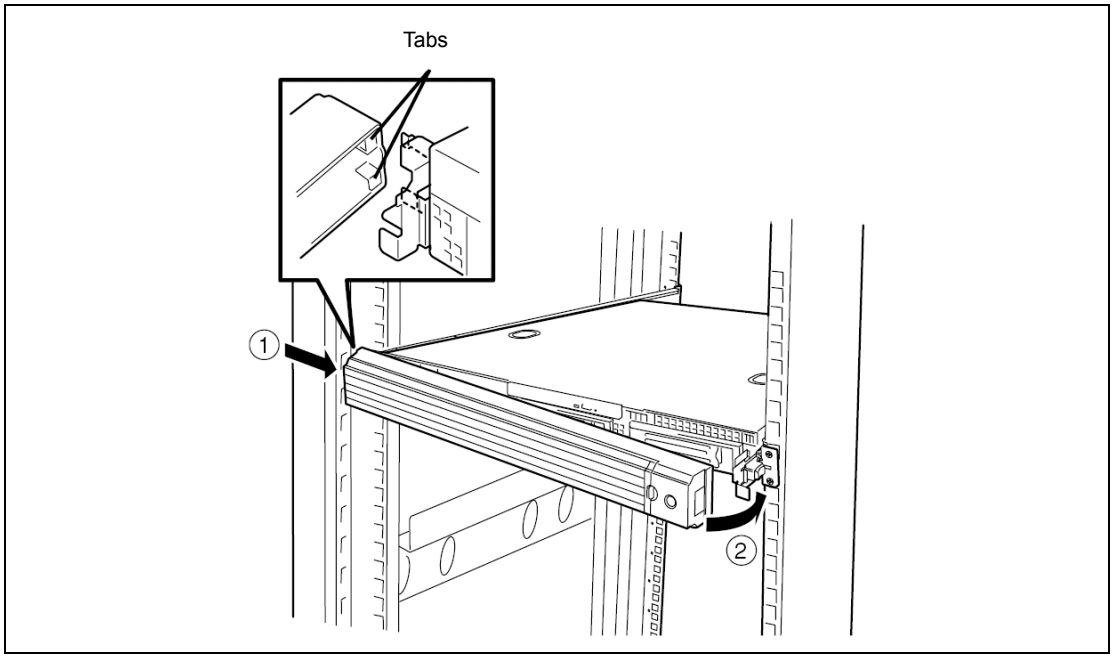
4. Make sure that the sliding rails move smoothly by pulling the server out of the rack and pushing it in several times.

NOTES:

- To install the server in the location adjacent to the other device, pay attention to interference. If the installing server disturbs the other devices already been installed, adjust the position, and install the rail assembly again.
- Make sure that the sliding rails move smoothly. If the sliding rails are stuck to the rack frame and do not come out, reinstall them.

Installing the Front Bezel

1. Install the front bezel so that the left tab on the front bezel engages with the chassis frame.



Removal

Removing the Server

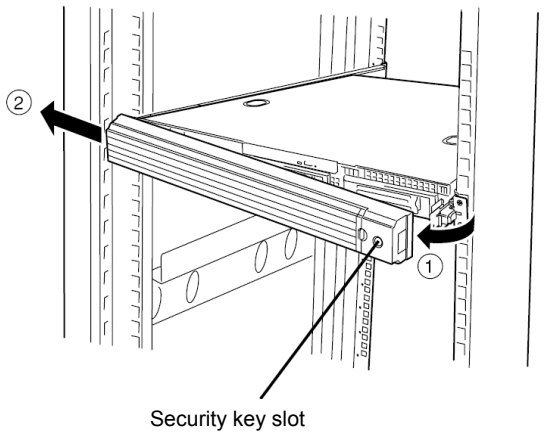
Remove the server from the rack in the following procedure.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

- Do not install/remove the server in/from the rack only by a single person.
- Do not pinch your finger with mechanical components.
- Do not apply any load on the server being pulled out from the rack.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.
- Do not pull out the server from the rack while it is operating.

1. Make sure that the server is off-powered, and disconnect the power cords and all the interface cables from the server.
2. Unlock the front bezel with the security key.

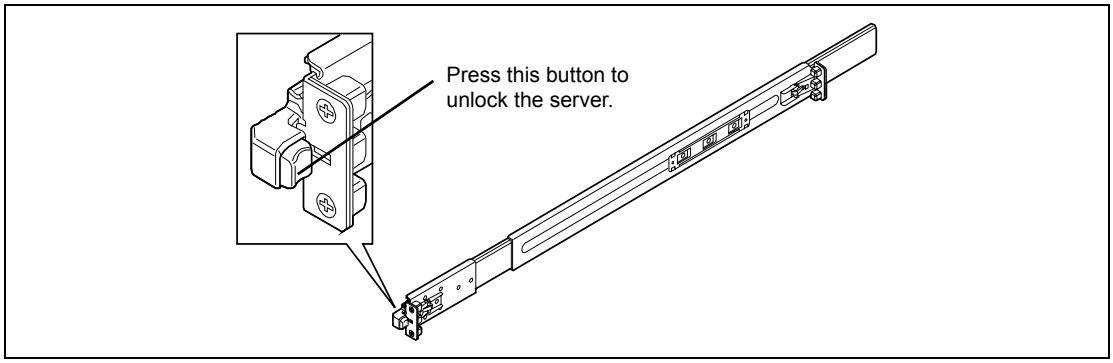


3. <This step is required only when the optional cable arm is mounted.>

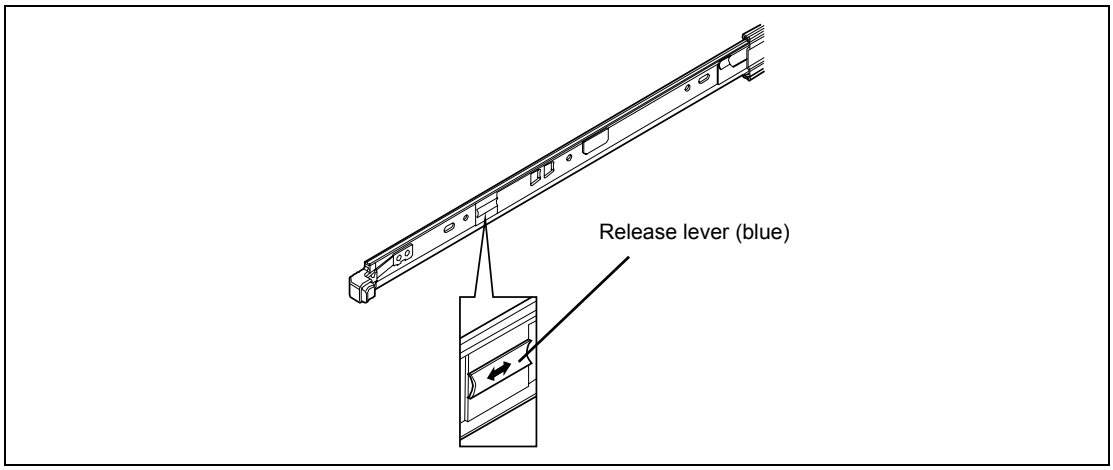
   Remove the cable arm from the server.

4. While pushing the left and the right unlock buttons on the front of the server, pull out the server from the rack slowly and carefully.

The server clicks to be latched.



5. While pushing the right and left release levers (blue) forward or rearward to unlock, slowly pull out the server from the rack.



IMPORTANT: Do not apply any load on the server pulled out from the rack. Doing so may cause personal injury if the server drops.

6. Firmly hold the server, and take it out from the rack.

IMPORTANT:

- Pull out the server slowly holding the bottom of the server by at least two persons.
- Do not apply any load on the server pulled out from the rack. Doing so may cause personal injury if the server drops.
- Be very careful not to get your finger caught in the levers or rails.

Removing Rail Assemblies

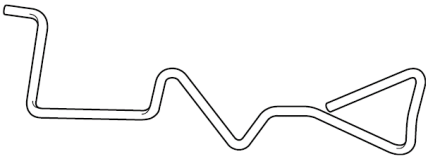
Remove the rail assembly from the 19-inch rack in the following procedure.

⚠ CAUTION

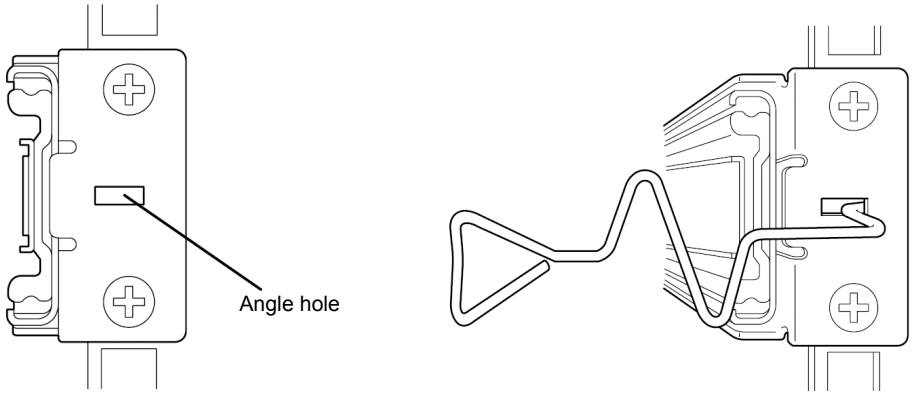
Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

- Do not install/remove the server in/from the rack only by a single person.
- Do not pinch your finger with mechanical components.
- Do not apply any load on the server being pulled out from the rack.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.
- Do not pull out the server from the rack while it is operating.

1. Remove the server from the rack according to "Removing the Server" described earlier.
2. Prepare the tool to remove the sliding rail (outer rail). The tool is provided with your server.

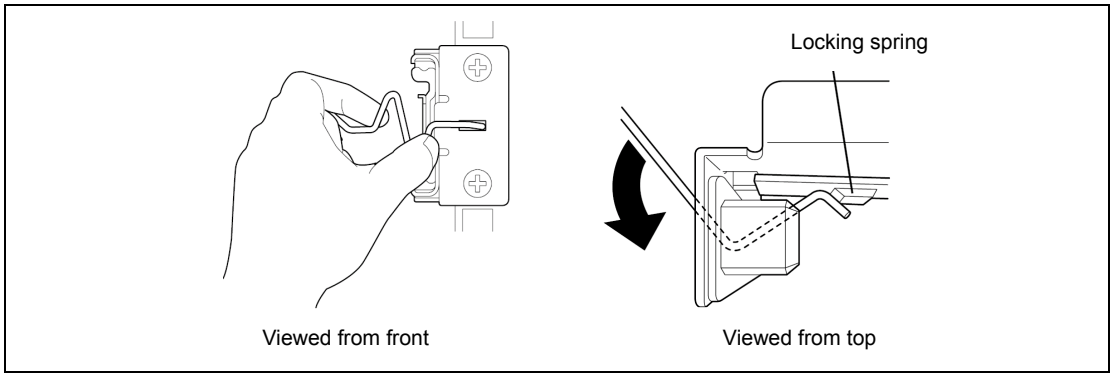


3. Insert the tool into the angle hole at the front of rail assembly, as shown in the figure below.

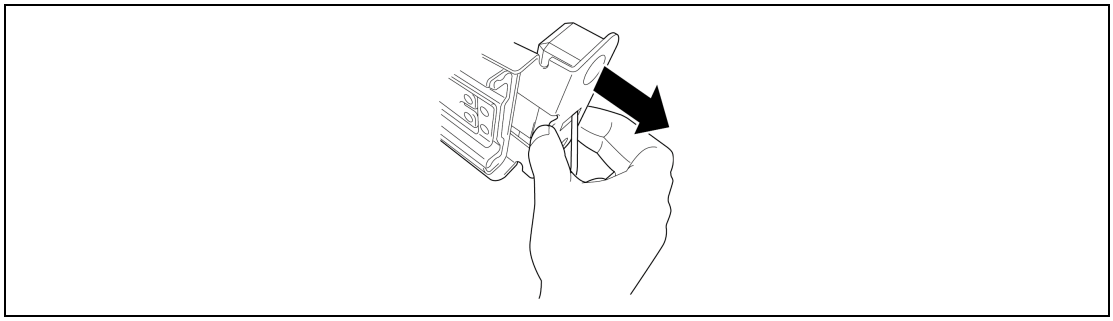


4. Unlock the rail assembly.

Unlock the rail assembly by applying force to the tool in the direction shown by an arrow.

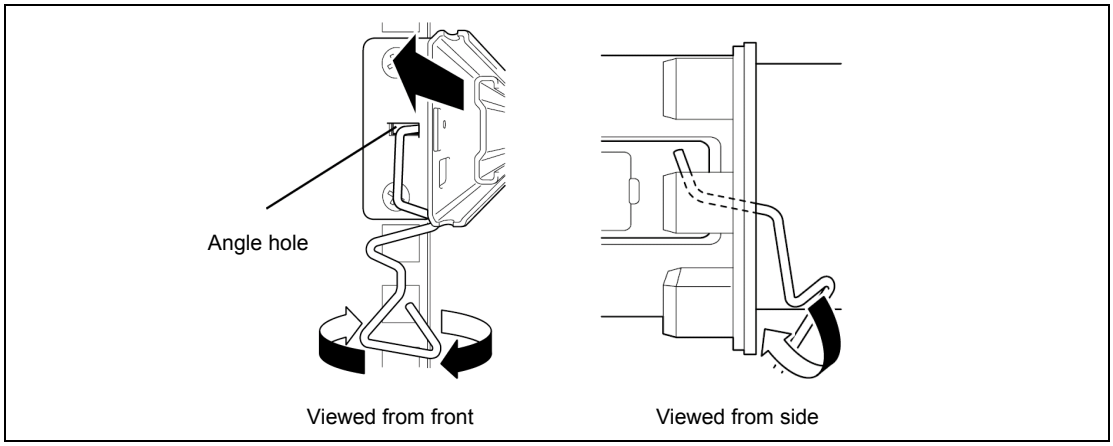


5. While the rail assembly is being unlocked, remove it from the rack.



6. Insert the tool into the angle hole at the rear of rail assembly to unlock it.

Rotate the tool as shown in the figure below to unlock the rail assembly.



7. While the rail assembly is being unlocked, remove it from the rack.

CONNECTING PERIPHERAL DEVICES

Connect peripheral devices to the server. The server is provided with connectors for wide variety of peripheral devices on its front and rear. The figure on the next page illustrates available peripheral devices for the server in the standard configuration and locations of the connectors for the devices.

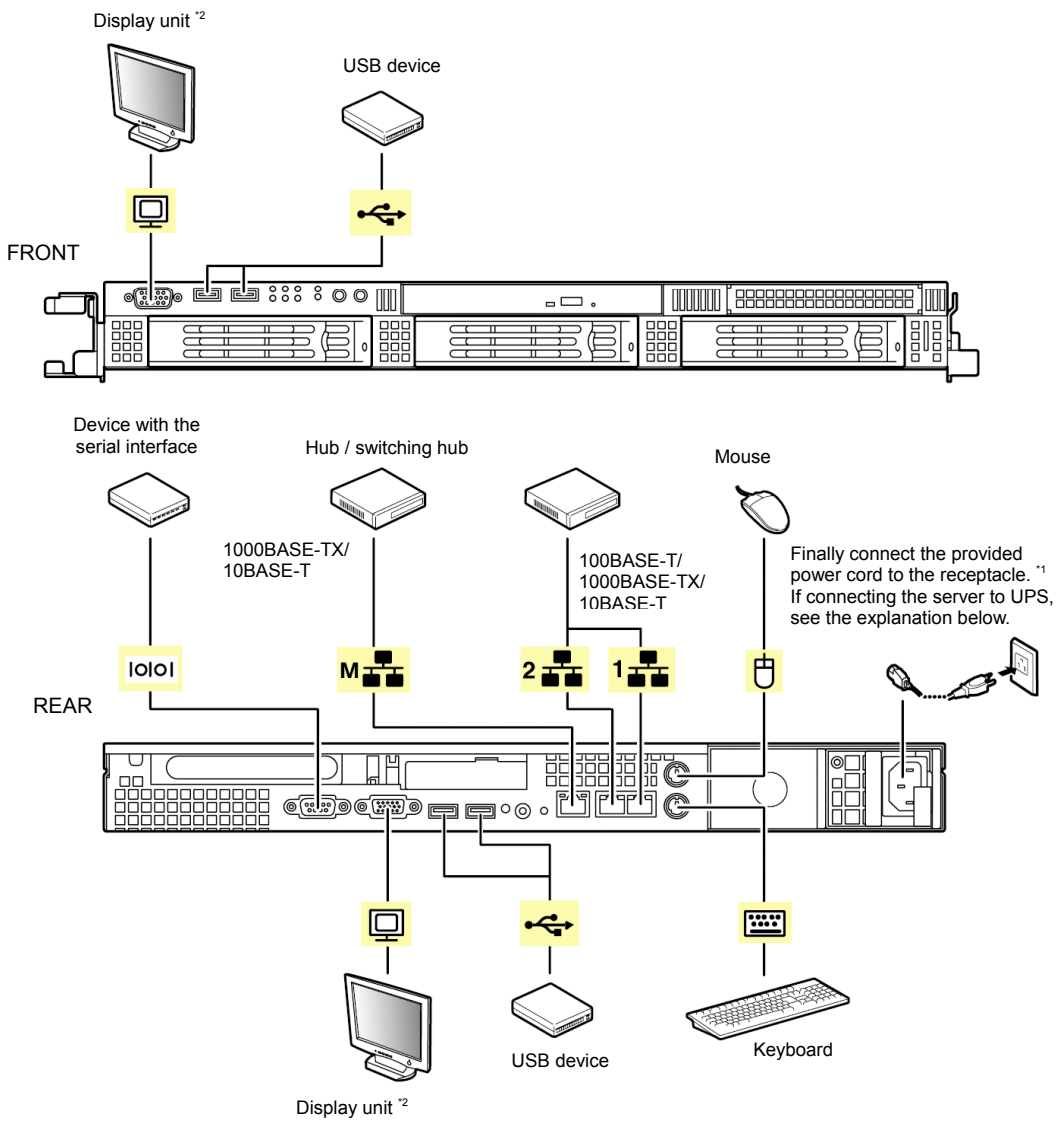
⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

- Do not connect any interface cable with the power cord of the NEC Express Server plugged to a power source.
- Do not use any unauthorized interface cable.

IMPORTANT:

- Power off the server and a peripheral device before connection. Connecting a powered peripheral device to the powered server will cause malfunctions and failures.
- To connect a third-party peripheral device or interface cable to the server, consult with your service representative for availability of such a device or cable. Some third-party devices may not be used for the server.
- A leased line cannot be connected directly to the serial port connectors.
- Secure the power cord(s) and interface cables with a tie wrap.
- Form the cables in such a way that they will not come into contact with the door or the guide rails on the sides of the server.
- Do not apply any pressure to the plug of the power cord.



*1 Connect the power cord to a circuit breaker of 15 A or less.
*2 The display unit can be connected to either of front or rear port.

CONNECTING POWER CORD

Connect the provided power cord to the server.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-12 for details.

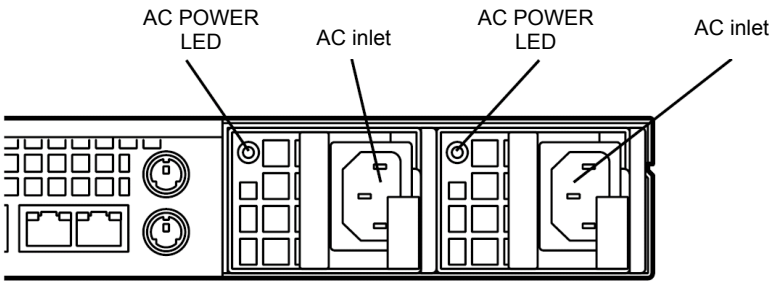
- Do not hold the power plug with a wet hand.
- Do not connect the ground wire to a gas pipe.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

- Do not plug the power cord in to an improper power source.
- Do not connect the power cord to an outlet that has an illegal number of connections.
- Insert the power plug into the outlet as far as it goes.
- Use the authorized power cord only.

1. Plug the provided power cord into the power receptacle on the rear of the server.
2. Plug the other end of the power cord into the wall outlet.



IMPORTANT:

- Connect the power cord to a circuit breaker of 15A or less.
- Secure the power cord with a tie wrap.

To connect the power cord from the server to an uninterruptive power supply (UPS), use service outlets on the rear of the UPS. Refer to the manual that comes with the UPS.

When the power cord from the server to a UPS, change the BIOS setup of the server to link with power supply from the UPS.

To power on the server from the UPS (Uninterruptible Power Supply), select [Server] - [AC-LINK] - [Power On].

Change a parameter for "AC-LINK" under the Server menu of the BIOS SETUP utility. See Chapter 4 for details.

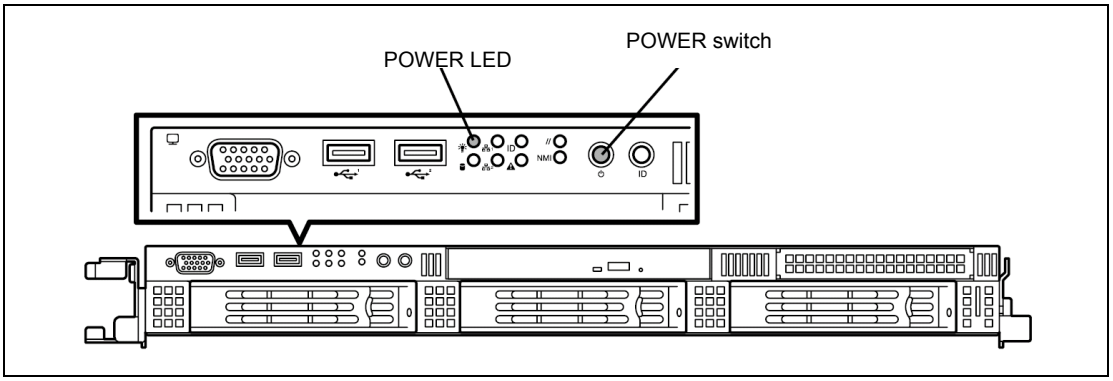
TURNING ON THE SERVER

Power on your system as follows.

1. Make sure all external devices, such as a video display, keyboard, and mouse (optional) have been connected, and the power cords are connected.
2. Power on the video display and any other external devices.

> **NOTE:** If the server power cord(s) is connected to a power control unit such as an UPS (Uninterruptible Power Supply), make sure that the power control unit is powered on.

3. Open the front bezel.
4. Press the POWER switch.
   The POWER LED on the front of the server comes on.



After a few seconds your system begins the internal Power-On Self Test (POST). POST automatically checks the system board, CPU module, memory, keyboard, and most installed peripheral devices.

> **IMPORTANT:**
>
> - Always allow POST to complete before powering down your system.
> - The server management logic on your system board monitors and logs system voltage changes. When powering down your system you may experience a 30-second delay from the time you press the push-button power on/off switch on the front panel and your system powering down. This is normal system operation and is required by the server management logic.

If you have problems powering on your system, see Chapter 8.

After you have successfully powered on your system, insert the NEC EXPRESSBUILDER DVD into the optical disk drive, reboot the system and follow the screen prompts to run NEC EXPRESSBUILDER.

INSTALLING OPERATING SYSTEM

See Chapter 5 for installing the Microsoft Windows Server 2003 operating systems.

To install the other operating system listed above, contact your service representative.

> **IMPORTANT:** Before installing the operating system, adjust the system date and time by using the BIOS setup utility "SETUP." See the next chapter for detail.

INSTALLING UTILITIES

Install the utilities that come with the server. See Chapter 6 for details.

MAKING BACKUP COPIES OF SYSTEM INFORMATION

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive and reboot the system.
2. Select [Tool menu (Normal mode)].
3. Select [English].
4. Select [Maintenance Utility].
5. Select [System Information Management].
6. Insert a floppy disk into the floppy disk drive.
7. Select [Save].

(This page is intentionally left blank.)

Chapter 4

Configuring Your Server

Configuration and setup utilities are used to change your system configuration. You can configure your system, as well as option boards you may add to your system, using the BIOS SETUP Utility. Several unique system parameters are configured using the BIOS SETUP, which is stored in the system FLASH memory.

The RAID configuration utility configures the RAID System and logical drives connected to the Onboard RAID Controller or Internal RAID Controller.

If your system has been factory configured, the BIOS SETUP or RAID configuration utility do not need to be run unless you want to change the password or security features, add certain types of option boards or devices, upgrade your system board, or change the RAID configuration.

This chapter also provides information on several system configuration parameters that are set by jumpers on the system board. However, these parameters do not usually require change.

SYSTEM BIOS (SETUP)

The SETUP utility is used to change system configuration parameters. This utility is pre-installed in the flash memory of the server and ready to run.

The server is configured with the correct parameters using the SETUP utility and shipped in the best conditions. Thus, you don't need to use the SETUP utility in most cases. However, you might wish to use the SETUP utility in the cases described below.

IMPORTANT:

- The SETUP utility is intended for system administrator use only.
- The SETUP utility allows you to set a password. The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters of the SETUP utility. With the User password, system parameters available for viewing and changing are limited.
- Do not set any password before installing the OS.
- The server contains the latest version of the SETUP utility. Dialog boxes appear on your SETUP utility, thus, may differ from descriptions in this manual. If you find anything unclear, see the online help or ask your service representative.
- Use the Exit menu when exiting the SETUP utility. Exiting the utility with the POWER switch or reset operation causes the stored parameters to lose.

Starting SETUP Utility

Powering on the server starts POST (Power On Self-Test) and displays its check results. If the NEC logo is displayed, press **Esc**.

After a few seconds, the following message appears at bottom left on the screen.

```
Press <F2> to enter SETUP
```

Press **F2** to start the SETUP utility and display its Main menu.

If you have previously set a password with the SETUP utility, the password entry screen appears. Enter the password.

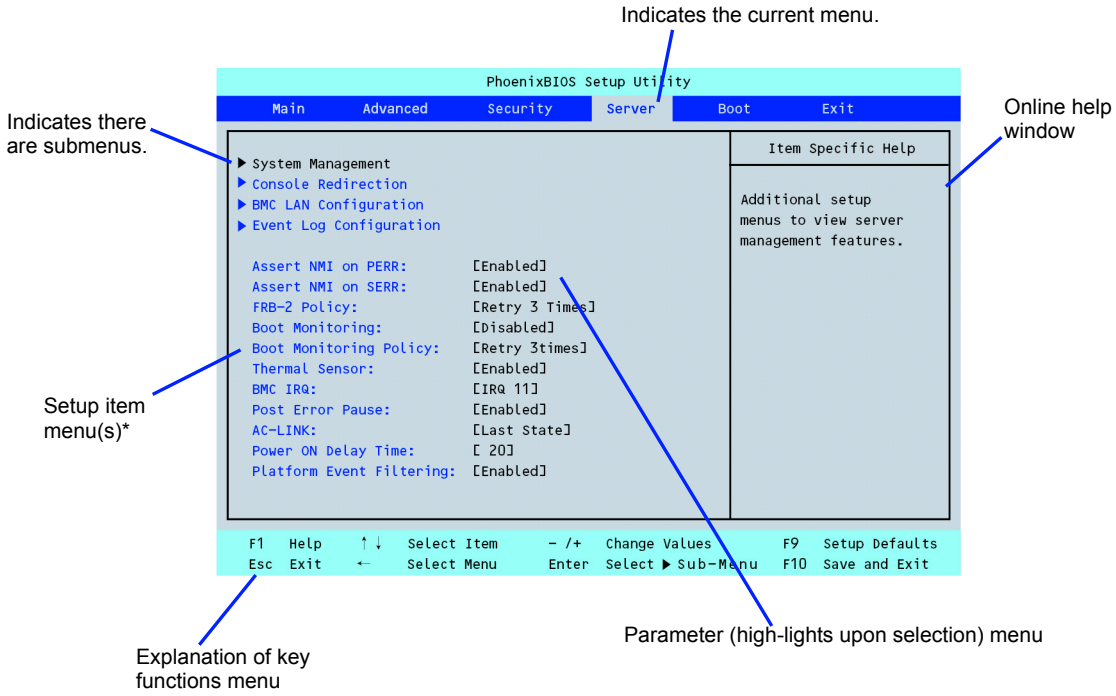
```
Enter password:[                ]
```

Up to three password entries will be accepted. If you fail to enter the password correctly for three consecutive times, the server halts. (You can no longer proceed.) Power off the server.

NOTE: The server is provided with two levels of password: Supervisor and User. With the Supervisor password, you can view and change all system parameters. With the User password, system parameters available for viewing and changing are limited.

Description on On-Screen Items and Key Usage

Use the following keyboard keys to work with the SETUP utility. (Key functions are also listed at the bottom of the screen.)


Indicates the current menu.
Indicates there are submenus.
Online help window
Setup item menu(s)*
Explanation of key functions menu
Parameter (high-lights upon selection) menu
PhoenixBIOS Setup Utility
Main
Advanced
Security
Server
Boot
Exit
System Management
Console Redirection
BMC LAN Configuration
Event Log Configuration
Assert NMI on PERR: [Enabled]
Assert NMI on SERR: [Enabled]
FRB-2 Policy: [Retry 3 Times]
Boot Monitoring: [Disabled]
Boot Monitoring Policy: [Retry 3times]
Thermal Sensor: [Enabled]
BMC IRQ: [IRQ 11]
Post Error Pause: [Enabled]
AC-LINK: [Last State]
Power ON Delay Time: [20]
Platform Event Filtering: [Enabled]
Item Specific Help
Additional setup menus to view server management features.
F1 Help ↑ ↓ Select Item - /+ Change Values F9 Setup Defaults
Esc Exit ← Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

* The menus displayed in gray indicates the information only or unchangeable secured by BIOS password.

Cursor (↑, ↓):	Selects an item on the screen. The highlighted item is currently selected.
Cursor (←, →):	Selects the Main, Advanced, Security, Server, Boot, or Exit menu.
– and **+**:	Changes the value (parameter) of the selected item. When a submenu option (an option preceded by "➤") is selected, these keys are disabled.
Enter	Press **Enter** to select (determine) parameters.
Esc	Exit SETUP and return to the previous screen.
F9:	Sets the parameter of the currently displayed item back to the factory set parameter.
F10:	Save and exit the SETUP utility.

Menu and Parameter Descriptions

The SETUP utility has the following six major menus:

- Main
- Advanced
- Security
- Server
- Boot
- Exit

To set minute functions, select a submenu from the above menus. The following describes available functions and parameters, as well as the factory-set, for each menu.

Main

Option	Parameter	Description	Your Setting
System Time	HH:MM:SS	Set the system time.	
System Date	MM/DD/YYYY	Set the system date.	
Hard Disk Pre-Delay	[Disabled] 3 seconds 6 seconds 9 seconds 12 seconds 15 seconds 21 seconds 30 seconds	Allows slower spin-up drives to come ready.	
SATA Port 0 SATA Port 1 SATA Port 2 SATA Port 3 SATA Port 4 SATA Port 5	Select submenu	Set the information on the device connected to each channel on the submenu. The settings of some items may be changed. However, leave the items as they are at the shipment.	
Processor Settings	Select submenu	Shows the processor settings submenu.	
Language	[English] Français Deutsch Español Italiano	Select which language BIOS displays.	

[ ]: Factory-set

Processor Settings

Option	Parameter	Description	Your Setting
Processor Speed Setting	nnn GHz	Displays clock speed for the processor. (View only)	
Processor 1 CPUID	Numeral Disabled Not Installed	Displays CPU ID for processor, if present. "Disabled" indicates that the processor is defected. "Not Installed" indicates that no processor is installed. (View only)	
Processor 1 L2 Cache	nnn KB	Displays L2 cache size for processor.	
Processor 1 L3 Cache	nnn KB	Displays L3 cache size for processor.	
Processor 2 CPUID	Numeral Disabled Not Installed	Displays CPU ID for processor, if present. "Disabled" indicates that the processor is defected. "Not Installed" indicates that no processor is installed. (View only)	
Processor 2 L2 Cache	nnn KB	Displays L2 cache size for processor.	
Processor 2 L3 Cache	nnn KB	Displays L3 cache size for processor.	
Active Processor Cores	[ALL] 12	Specifies the number of valid cores in the processor.	
Hyper Threading Technology	Disabled [Enabled]	Displayed only when the CPU supports this feature.	
Execute Disable Bit	[Enabled] Disabled	Displayed only when the CPU supports Execute Disable Bit.	
Intel SpeedStep(R) Technology	[Enabled] Disabled	If set to "Enabled", Intel Turbo Boost Technology is also enabled (only when the CPU supports this feature).	
C1 Enhanced Mode	[Enabled] Disabled	Enables or disables the C1 Enhanced Mode.	
Virtualization Technology	[Enabled] Disabled	Enables or disables the Intel(R) virtualization technology.	
Hardware Prefetcher	[Enabled] Disabled	Enables or disables the hardware prefetcher.	
Adjacent Cache Line Prefetch	[Enabled] Disabled	Enables or disables the optimization of an access from memory to cache.	

[ ]: Factory-set

NOTE: If the CPU that supports Intel(R) Turbo Boost Technology is installed, [Turbo Boost Technology] is always set to [Enabled].

Advanced

Option	Parameter	Description	Your Setting
Memory Configuration	–	Displays Memory Configuration submenu.	
PCI Configuration	–	Displays PCI Configuration submenu.	
Peripheral Configuration	–	Displays Peripheral Configuration submenu.	
Advanced Chipset Control	–	Displays Advanced Chipset Control submenu.	
Boot-time Diagnostic Screen	Enabled [Disabled]	When disabled, the BIOS will display the NEC logo during POST. Press **Esc** to switch to the POST execution screen.	
Reset Configuration Data	[No] Yes	Select "Yes" if you want to clear the system configuration data during the next boot. Automatically reset to "No" in the next boot.	
NumLock	On [Off]	Sets power on Numlock state.	
Memory/Processor Error	[Boot] Halt	If "Halt" is selected, the boot is stopped when POST error occurs.	

[ ]: Factory-set

Memory Configuration

Option	Parameter	Description	Your Setting
Installed memory	nnn MB	Indicates the total capacity of the basic memory. (View only)	
Available under 4GB	nnnnnnn MB	Indicates the capacity of memory available in the area under 4GB. (View only)	
CPU1_DIMM 1-6 Status CPU2_DIMM 1-6 Status	Normal Disabled Not installed Error	Indicates the current memory status. "Normal" indicates the normal status, "Disabled" indicates a memory error, "Not installed" indicates no DIMM installed, and "Error" indicates the system is forcibly started with memory error. (View only).	
Memory Retest	Yes [No]	Causes BIOS to retest all memory on the next boot.	
Extended RAM Step	1MB 1KB Every location [Disabled]	"1MB" indicates that the memory test is done in the unit of 1MB. "1KB" indicates that the memory test is done in the unit of 1KB. "Every location" tests every memory location. "Disabled" indicates that only memory initialization is done. Only pressing **Space** is acceptable to suspend the test during the memory test.	
Memory RAS Mode	[Independent] Mirror Lock Step	Specifies the memory RAS mode. See "DIMM" in Chapter 9 for details.	
NUMA configuration	[Disabled] Enabled	Disables or enables Non-Uniform Memory Access feature.	

[ ]: Factory-set

PCI Configuration

– Onboard Video Controller submenu

Option	Parameter	Description	Your Setting
VGA Controller	Disabled [Enabled]	If Disabled, the BIOS will hold the embedded chip in reset.	
Onboard VGA Option ROM Scan	[Auto] Force	Allows selecting the onboard VGA controller or optional PCI VGA controller as the display device that will be active when the system boots. The “Force” option is selected to use the onboard VGA controller if the optional PCI VGA controller is installed in the system.	

[ ]: Factory-set

– Onboard LAN submenu

Option	Parameter	Description	Your Setting
LAN Controller	Disabled [Enabled]	If Disabled, the BIOS will hold the embedded chip in reset.	
LAN1 Option ROM Scan	Disabled [Enabled]	If Enabled, initialize device expansion ROM.	
LAN2 Option ROM Scan	Disabled [Enabled]	If Enabled, initialize device expansion ROM.	

[ ]: Factory-set

Option	Parameter	Description	Your Setting
PCI Slot 0A Option ROM	[Enabled] Disabled	TBD	
PCI Slot 1B Option ROM	Disabled [Enabled]	Used to enable or disable an option ROM on a PCI board connected to the full-height riser card.	
PCI Slot 1C Option ROM	Disabled [Enabled]	Used to enable or disable an option ROM on a PCI board connected to the low-profile riser card.	

[ ]: Factory-set

Peripheral Configuration

IMPORTANT: Note that the interrupt and/or base I/O address are not overlapped with others. If the value set for the interrupt or base I/O address is used in another resource, the yellow asterisk (*) appears. Reset any item with the yellow asterisk properly.

Option	Parameter	Description	Your Setting
Serial Port A	Disabled [Enabled]	Selects whether serial port A is enabled or disabled. To use serial port A, an optional N8117-01A additional RS232C connector is required.	
Base I/O address	[3F8] 2F8 3E8 2E8	Selects the base I/O address for serial port A.	
Interrupt	IRQ 3 [IRQ 4]	Selects the interrupt for a serial port A.	
Serial Port B	Disabled [Enabled]	Selects whether serial port B is enabled or disabled.	
Base I/O address	3F8 [2F8] 3E8 2E8	Selects the base I/O address for serial port A.	
Interrupt	[IRQ 3] IRQ 4	Selects the interrupt for a serial port A.	
USB 2.0 Controller	Disabled [Enabled]	Selects the USB 2.0 controller is enabled or disabled.	
Serial ATA	Disabled [Enabled]	Selects whether the serial ATA is enabled or disabled.	
SATA Controller Mode Option	Compatible [Enhanced]	Selects an operation mode of onboard SATA controller. Displayed only when Serial ATA is enabled. Compatible mode: SATA drives are automatically detected and recognized as legacy mode. Enhanced mode: SATA drives are automatically detected and recognized as native mode.	
SATA AHCI	Disabled [Enabled]	Selects whether AHCI (Advanced Host Controller Interface) is enabled or disabled. Displayed only when [Enhanced] is selected for [SATA Controller Mode Option].	
SATA RAID	Disabled [Enabled]	When set to [Enabled], this menu appears if RAID configuration jumper switch is set to [RAID enable] position. See Chapter 4 for details.	

[ ]: Factory-set

Advanced Chipset Control

Option	Parameter	Description	Your Setting
Multimedia Timer	Disabled [Enabled]	Specify whether the system supports the multimedia timer feature.	
Intel(R) I/O AT	Disabled [Enabled]	Enables or disables the Intel(R) Acceleration technology.	
Intel(R) VT-d	Disabled [Enabled]	Specify whether the Intel(R) Virtualization Technology for Directed I/O feature is enabled or disabled. This item appears only when the processor supports this feature.	
Wake On LAN/PME	Disabled [Enabled]	Specify whether the remote power-on function through a network is enabled or disabled.	
Wake On Ring	[Disabled] Enabled	Specify whether the remote power-on function through a serial port is enabled or disabled.	
Wake On RTC Alarm	[Disabled] Enabled	Specify whether the remote power-on function by using RTC alarm feature is enabled or disabled.	

[ ]: Factory-set

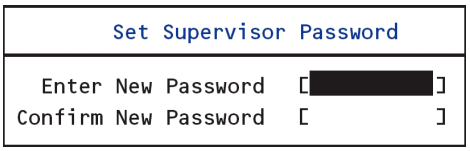
IMPORTANT:

- If the AC power is turned off while the Wake On Ring feature is enabled, this feature is disabled at the next system boot after AC power-on. You need to press the Power switch to boot the system. If the AC power is turned off, Wake On Ring feature on power management chip is disabled until the next DC power-on.
- To use this feature on Windows Server 2003, see Chapter 8 "Problems with Windows Server 2003".

Security

The Security menu appears if you move the cursor to the position of "Security."

Press **Enter** on "Set Supervisor Password" or "Set User Password," to display the following screen.



Enter the passwords on the dialog box. Passwords may have up to eight characters including alphanumerics and symbols.

IMPORTANT:

- User password can be set only when Supervisor password is already set.
- Set the passwords only after OS is installed.

See the table below for the items.

Option	Parameter	Description	Your Setting
Security Chip Configuration	–	Security Chip Configuration submenu is displayed.	
User Password Is	Clear Set	Status only, user cannot modify. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (see Configuring Mother Board Jumpers in this Chapter).	
Supervisor Password Is	Clear Set	Status only, user cannot modify. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (see Configuring Mother Board Jumpers in this Chapter).	
Set User Password	Up to eight alphanumerics	Supervisor password controls access to the setup utility. When Enter is pressed, the user is prompted for a password; press **Esc** to abort. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (refer to Configuring Mother Board Jumpers in this chapter).	

Option	Parameter	Description	Your Setting
Set Supervisor Password	Up to eight alphanumerics	When the <Enter> key is pressed, the user is prompted for a password; press ESC key to abort. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (refer to Configuring Mother Board Jumpers in this chapter).	
Password on boot	[Disabled] Enabled	Disables or enables password entry on boot.	
Fixed disk boot sector	[Normal] Write Protect	Will write protect the boot sector of the hard drive to prevent viruses from corrupting the drive under DOS if set to write protect.	
Power Switch Inhibit	[Disabled] Enabled	Enables or disables the POWER switch mask feature. If "Enabled" is selected, power-off with the POWER switch becomes unavailable after OS boot-up. (Forced shut down feature is always acceptable to the server. Forced shut down is a feature to shut down by pressing the POWER switch for at least four seconds.)	
Disable USB Ports	[Disabled] Front Rear Internal Front + Rear Front + Internal Rear + Internal Front + Rear + Internal	Enables or disables the USB ports.	

[ ]: Factory-set

Security Chip Configuration Submenu

Option	Parameter	Description	Your Setting
TPM Support	[Disabled] Enabled	Disables or enables TPM feature.	
Current TPM State	–	Displays the current TPM state.	
Change TPM State	[No Change] Enable & Activate Deactivate & Disable Clear	Changes TPM state. (This option can be selected only when the supervisor password is set.)	

[ ]: Factory-set

IMPORTANT: If you select any parameter except for [No Change] to change TPM State, a confirmation screen as shown below appears at the end of POST after restarting the system. Select [Execute] on the confirmation screen to determine the change you have made.

When [Enable & Activate] is selected:

```
Physical Presence operations

TPM configuration change was requested to
State:     Enable & Activate

Note:
This section will switch on the TPM

Reject
Execute
```

When [Deactivate & Disable] is selected:

```
Physical Presence operations

TPM configuration change was requested to
State:     Deactivate & Disable

Note:
This action will switch off the TPM

                    WARNING!!!
Doing so might prevent security applications
that rely on the TPM from functioning
as expected

Reject
Execute
```

When [Clear] is selected:

```
Physical Presence operations

TPM configuration change was requested to
State:     Clear

                    WARNING!!!
Clearing erases information stored on the TPM.
You will lose all created keys and access to
data encrypted by these keys.

Reject
Execute
```

Server

Option	Parameter	Description	Your Setting
System Management	–	System Management submenu is displayed.	
Console Redirection	–	Console Redirection submenu is displayed.	
BMC LAN Configuration	–	BMC LAN Configuration submenu is displayed.	
Event Log Configuration	–	Event Log Configuration submenu is displayed.	
Assert NMI on PERR	Disabled [Enabled]	Specify whether to support PCI PERR or not.	
Assert NMI on SERR	Disabled [Enabled]	Specify whether to support PCI SERR or not.	
FRB-2 Policy	Disable FRB2 Timer [Retry 3 Times] Always Reset	Set the FRB level 2 timer.	
Boot Monitoring	[Disabled] 5 Minutes 10 minutes 15 minutes 20 minutes 25 minutes 30 minutes 35 minutes 40 minutes 45 minutes 50 minutes 55 minutes 60 minutes	Specify whether to enable or disable the boot monitoring function on booting, or select the time limit for timeout. To use this function, install NEC ESMPRO Agent. Set this item to "Disabled" if the system is booted from OS without installation of NEC ESMPRO Agent.	
Boot Monitoring Policy	[Retry 3 Times] Always Reset	Specify the processing at the occurrence of timeout during boot monitoring. If [Retry 3 times] is selected, the system is reset after the occurrence of timeout and OS boot is retried up to three times. If [Always Reset] is selected, the system is reset after the occurrence of timeout and OS boot is retried repeatedly. * If no service partition exists in the system, OS boot is retried repeatedly from the system partition.	
Thermal Sensor	Disabled [Enabled]	Specify whether to enable or disable the thermal sensor monitoring function. If a thermal error is detected with this item being set to "Enabled", the system stops at the end of POST.	
BMC IRQ	Disabled [IRQ 11]	Determines routing of the BMC interrupt.	

Option	Parameter	Description	Your Setting
Post Error Pause	Disabled [Enabled]	Specify whether to stop the POST once at the end of POST if an error occurs during the POST.	
AC-LINK	Stay Off [Last State] Power On	Specify the state of power when the AC power to the server is turn off once and then on.	
Power ON Delay Time (Sec)	[20] - 255	Specify the power on delay time within the range between 20 and 255 seconds. The time specified is valid when "Power On" or "Last State" is specified for AC LINK.	
Platform Event Filtering	Disabled [Enabled]	Specify whether to enable or disable the platform event filtering (PEF) feature.	

[ ]: Factory-set

IMPORTANT: To power on the server from the UPS (Uninterruptible Power Supply), select [Server] - [AC LINK] - [Power On].

The table below shows the operation when the AC power to the server is turn off once and then on again, depending on the setting of "AC LINK."

System status before AC power off	Setting of AC LINK		
	Stay Off	Last State	Power On
Operating	Off	On	On
Aborting (DC power being off also)	Off	Off	On
Forced shutdown	Off	Off	On

* Press the power switch continuously for four seconds or longer. This forcibly turns off the power.

System Management Submenu

Option	Parameter	Description	Your Setting
BIOS Revision	–	Displays the current BIOS revision. (View only)	
Board Part Number	–	Displays the part number of mother board. (View only)	
Board Serial Number	–	Displays the serial number of mother board. (View only)	
System Part Number	–	Displays the part number of the system. (View only)	
System Serial Number	–	Displays the serial number of the system. (View only)	
Chassis Part Number	–	Displays the part number of the chassis. (View only)	
Chassis Serial Number	–	Displays the serial number of the chassis. (View only)	
Onboard LAN1 MAC Address	–	Displays the MAC address of the onboard LAN port 1. (View only)	
Onboard LAN2 MAC Address	–	Displays the MAC address of the onboard LAN port 2. (View only)	
Management LAN MAC Address	–	Displays the MAC address of the management LAN port. (View only)	
BMC Device ID	–	Displays BMC device ID. (View only)	
BMC Device Revision	–	Displays BMC device revision. (View only)	
BMC Firmware Revision	–	Displays BMC firmware revision. (View only)	
SDR Revision	–	Displays revision of the sensor data record.	
PIA Revision	–	Displays revision of the platform information area. (View only)	

[ ]: Factory-set

Console Redirection Submenu

Option	Parameter	Description	Your Setting
BIOS Redirection Port	[Disabled] Serial Port A Serial Port B	Specify the address/interrupt of the serial port to which a remote console is connected.	
Baud Rate	9600 [19.2K] 38.4K 57.6K 115.2K	Specify the baud rate used for the interface with successive remote consoles.	
Flow Control	None Xon/Xoff [CTS/RTS] CTS/RTS+CD	Specify the flow control method.	
Console Type	PC ANSI [VT100+] VT-UTF8	Specify the type of remote console.	
Continue Redirection after POST	Disabled [Enabled]	Specify whether to continue console redirection feature after completion of POST.	
Remote Console Reset	[Disabled] Enabled	Specify whether to enable or disable resetting by Escape command (Esc R) sent from the remote console. If the server is connected with the management PC that uses NEC ESMPRO Manager, this option is always enabled even if "Disabled" is specified here.	

[ ]: Factory-set

BMC LAN Configuration Submenu

Option	Parameter	Description	Your Setting
Shared BMC LAN	[Disabled] Enabled	Set to "Disabled" if the management LAN port is used for management LAN. Change to "Enabled" to use the LAN port 2 for management LAN. If set to "Enabled", the management LAN port becomes unavailable.	
LAN Connection Type	[Auto Negotiation] 100Mbps Full Duplex 100Mbps Half Duplex 10Mbps Full Duplex 10Mbps Half Duplex	Specify the connection type for management LAN port.	
IP Address	[192.168.001.001]	Specify an IP address for management LAN.	
Subnet Mask	[255.255.255.000]	Specify a subnet mask for management LAN.	
Default Gateway	[000.000.000.000]	Specify a default gateway for management LAN.	
DHCP	[Disabled] Enabled	Set to [Enabled] to obtain an IP address from DHCP server automatically. If you intend to specify an IP address manually, set to [Disabled].	
Web Interface	–	–	
HTTP	[Disabled] Enabled	Set to [Enabled] to use HTTP communication for Web interface.	
HTTP Port Number	[80]	Specify the TCP port number which the management LAN uses for HTTP communication.	
HTTPS	[Disabled] Enabled	Set to [Enabled] to use HTTPS communication for Web interface.	
HTTPS Port Number	[443]	Specify the TCP port number which the management LAN uses for HTTPS communication.	
Command Line Interface	–	–	
Telnet	[Disabled] Enabled	Set to [Enabled] to use Telnet communication as a command line interface.	
Telnet Port Number	[23]	Specify the TCP port number to be used for Telnet communication.	
SSH	[Disabled] Enabled	Set to [Enabled] to use SSH communication as a command line interface.	
SSH Port Number	[22]	Specify the TCP port number to be used for SSH communication.	
Clear BMC Configuration	[Enter]	Press **Enter** and select "Yes" to initialize the BMC configuration.	

[ ]: Factory-set

IMPORTANT: Notes on performing Clear BMC Configuration

- Executing "Load Setup Defaults" in BIOS SETUP utility does not restore the default value for settings related to management LAN of BMC. To restore the default value, you need to execute Clear BMC Configuration.
- It takes about several tens seconds until initialization completes after execution of Clear BMC Configuration.
- Executing Clear BMC Configuration also clears settings made in NEC ESMPRO Manager. Before execution, be sure make backup copy of setting information of NEC ESMPRO Manager.

NOTE: Executing [Save Custom Defaults/Load Custom Defaults] of BIOS SETUP does not save the settings you have made in BMC LAN Configuration menu.

Event Log Configuration Submenu

Option	Parameter	Description	Your Setting
System Event Log	–	System Event Log submenu is displayed.	
Auto Clear Event Logs	Enabled [Disabled]	If set to "Enabled", logs are automatically cleared when the error log area is fulfilled.	
Clear All Event Logs	–	Press **Enter** and select "Yes" to clear the system event log.	

[ ]: Factory-set

Boot

If you move the cursor to the position of "Boot," the Boot menu appears, which is used to set the boot priority.

Indication	Device
USB CDROM	USB CD-ROM drive
IDE CD	ATAPI CD-ROM (including optical disk drive)
USB FDC	USB floppy disk drive
USB KEY	USB flash memory device
IDE HDD	IDE hard disk drives
USB HDD	USB hard disk drives
PCI SCSI	Internal hard disk drives installed in your system (“Software RAID” is displayed in the RAID configuration.)
PCI BEV	**IBA GE Slot xxxx** Onboard LAN. LAN1: Slot 0100, LAN2: Slot 0101 **Other indication** Optional PCI board connected to the riser module.

1. When BIOS detects a bootable device, it displays the information on the device in the relevant indication.

   To boot the server from a desired device, the device must be registered as a boot device. (Up to eight boot devices can be registered.)

2. Pressing **X** after selecting a device allows the selected device to be registered as a boot device or deleted from the registration.

   With eight boot devices being registered, any other device cannot be registered as a boot device even if you press **X**. To register a device as a boot device newly, first delete the registration of a device registered as a boot device but not booted any more.

   Pressing **Shift** + **1** after selecting a device allows the selected device to be made enabled/disabled.

3. You can change the boot priority (first to eighth) of each device by using ↑, ↓, **+** and/or **–**.

   To change the priority of a device, move the cursor to the device by using the ↑ or ↓**,** and press **+** or **–**.

Exit

The options on the menu are described below.

> **IMPORTANT:** For 3.5-inch disk model, record the current SATA controller options in the Peripheral Configuration page of the Advance menu before reloading the Setup or custom defaults. The SATA controller options affect the RAID System configuration.

Exit Saving Changes

Exit after writing all modified BIOS SETUP item values to CMOS.

Exit Discarding Changes

Exit leaving CMOS unmodified. User is prompted if any of the setup fields ware modified.

Load Setup Defaults

Load default values for all BIOS SETUP items.

Load Custom Defaults

Load custom defaults for BIOS SETUP options.

Save Custom Defaults

Saves the current values as custom defaults. The “Load Custom Defaults” menu appears on the screen after saving the custom default values.

Discard Changes

Read the previous values of the all BIOS SETUP items from CMOS.

Save Changes

Write all BIOS SETUP item values to CMOS.

RAID SYSTEM CONFIGURATION

This section describes how to use the internal hard disk drives as RAID System by Onboard RAID Controller (LSI Embedded MegaRAID) installed in 3.5-inch disk model or Internal RAID Controller (equivalent to N8103-116A) installed in 2.5-inch disk model.

About the optional RAID Controller for 3.5-inch disk model (N8103-116A/117A/118A), refer to the documents provided with optional RAID Controller.

RAID

Overview of RAID System

What is RAID (Redundant Array of Inexpensive Disks)?

RAID is an abbreviation for "Redundant Array of Inexpensive Disks". The RAID technology allows more than one hard disk drive (HDD) to be handled collectively.

In actual, RAID can configure more than one HDDs as a single array (disk group) to operate the HDDs effectively. This can bring higher performance than a single HDD of a large capacity.

The Onboard RAID Controller (LSI Embedded MegaRAID) or Internal RAID Controller (equivalent to N8103-116A) has a feature to divide a single disk group into several logical drives (virtual disks). Operating system recognizes these virtual disks as if it were a single hard disk drive. Operating system accesses to more than one hard disk drive configuring a disk group in parallel.

Some RAID levels can recover data from remaining data and parity by using rebuild feature if an error occurs in a single HDD. This can provide high reliability for the system.

RAID Levels

The record mode enabling the RAID feature includes several levels. Among the levels, the Onboard RAID Controller (LSI Embedded MegaRAID) supports RAID levels 0 and 1. The Internal RAID Controller (equivalent to N8103-116A) supports RAID levels 0, 1, 5, and 6. The number of hard disk drives required to create a disk group varies depending on the RAID level as shown in the table below.

RAID level	Number of required HDDs	
	Min.	Max.
RAID 0	1	6
RAID 1	2	2
RAID 5	3	6
RAID 6	3	6

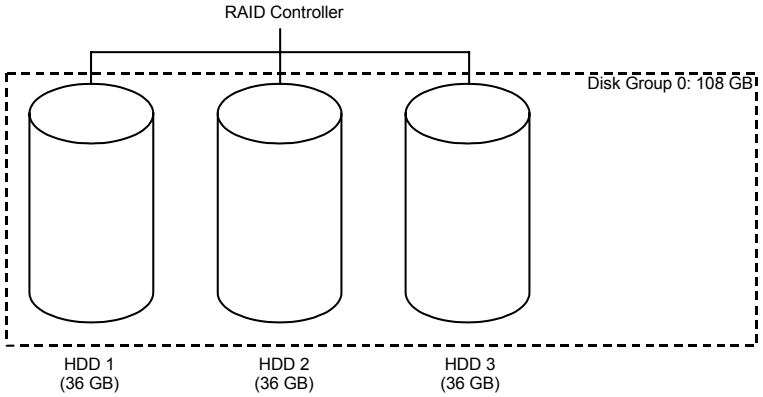
IMPORTANT: To use RAID 5 or RAID 6, with Internal RAID Controller (equivalent to N8103-116A), you need to additionally install the optional N8103-119 RAID Upgrade Kit.

NOTE: For details of the RAID levels, see "RAID Levels" described later in this chapter.

Disk Group

A disk group is configured with more than one HDDs.
The allowable number of disk groups is equal to the number of HDDs.

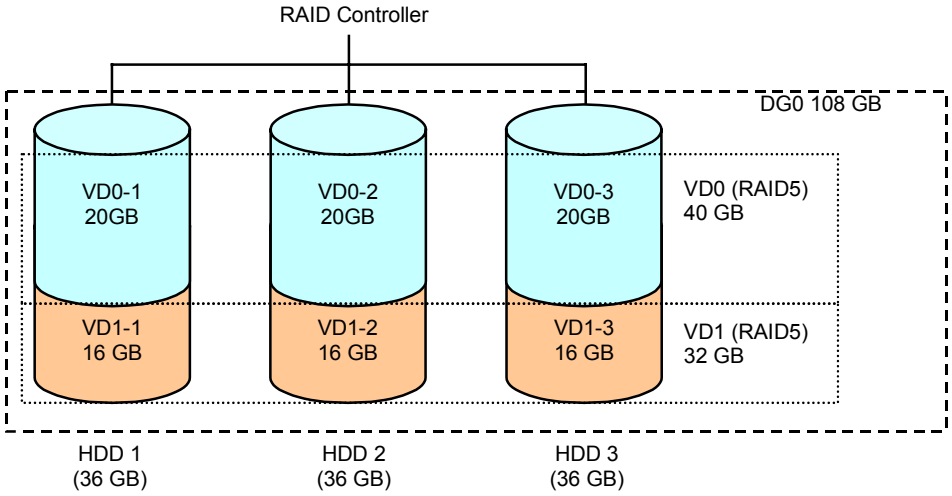
The figure below shows a sample configuration. The three HDDs are connected to the Onboard RAID Controller (LSI Embedded MegaRAID) or Internal RAID Controller (equivalent to N8103-116A), creating one disk group (DG).



Virtual Disk

Virtual disk is a logical drive defined in disk group. It is recognized as a physical drive by OS. The allowable number of virtual disks is up to 16 per disk group, or up to 64 per controller.

The figure below shows a sample configuration in which the Onboard RAID Controller (LSI Embedded MegaRAID) or Internal RAID Controller (equivalent to N8103-116A) is connected with three HDDs, creating one Disk Group. Two RAID5 virtual disks (VD) are defined in the Disk Group.



Parity

The parity means redundant data. A single set of redundant data is created from the data saved in more than one HDD.

The created redundant data is used for data recovery when a HDD is defected.

Hot-Swap

The hot-swap enables a HDD to be removed (or replaced) under system operation.

Hot-Spare

The hot-spare is prepared as an auxiliary HDD substituting for a defected HDD included in a logical drive which is configured at a redundant RAID level. Detecting a HDD fault, the system disconnects the HDD (or makes it offline) and starts rebuild using the hot-spare.

RAID Levels

Characteristics of RAID Levels

The table below lists the characteristics of the RAID levels.

Level	Function	Redundancy	Characteristics
RAID0	Striping	No	• Data read/write at the highest rate • Largest capacity • Capacity: (capacity of single HDD) × (number of HDDs)
RAID1	Mirroring	Yes	• Two HDDs required • Capacity: capacity of single HDD
RAID5	Striping of both data and redundant data	Yes	• Three or more HDDs required • Capacity: (capacity of single HDD) × ((number of HDDs) - 1)
RAID6	Striping of both data and redundant data	Yes	• Three or more HDDs required • Capacity: (capacity of single HDD) × ((number of HDDs) - 2)

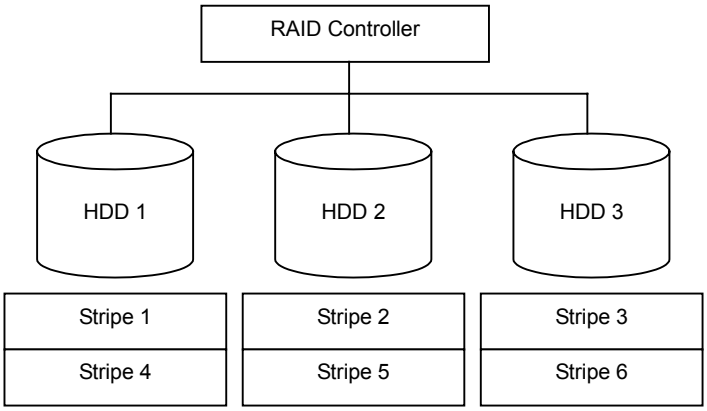
IMPORTANT: To use RAID 5 or RAID 6 with Internal RAID Controller (equivalent to N8103-116A), you need to additionally install the optional N8103-119 RAID Upgrade Kit.

RAID0

In RAID0, data to be recorded is distributed to HDDs. The mode is called "striping".

In the figure below, data is recorded in stripe 1 (disk 1), stripe 2 (disk 2), and stripe 3 (disk 3)… in the order. Because RAID0 allows all HDDs to be accessed collectively, it can provide the best disk access performance.

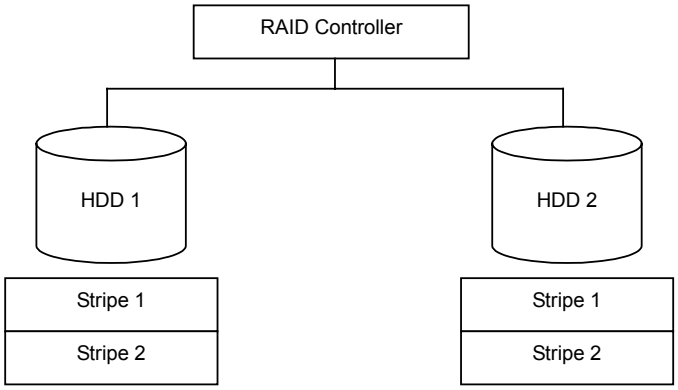
IMPORTANT: RAID0 cannot have data redundancy. If a HDD is defected, the data saved in the HDD cannot be recovered.



RAID1

In the RAID1 level, data saved in a HDD is written to another HDD without change. The mode is called "mirroring".

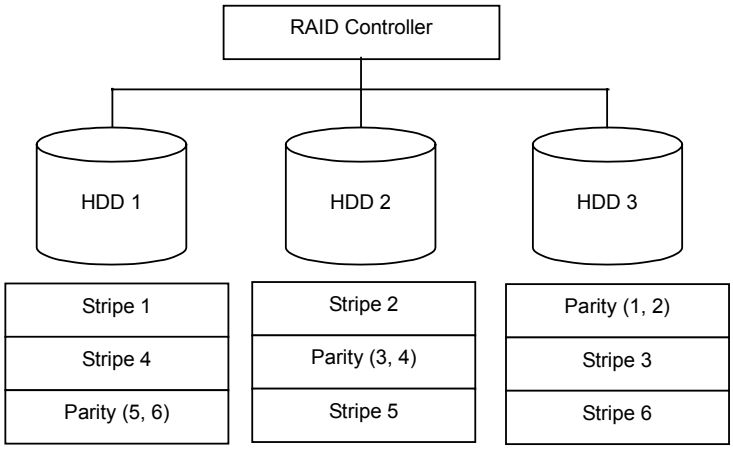
When data is written onto a single HDD, the same data is written onto another HDD. If either of the HDDs is defected, the other HDD containing the same data can substitute for the defected HDD. Thus the system can continue to operate without interruption.



RAID5

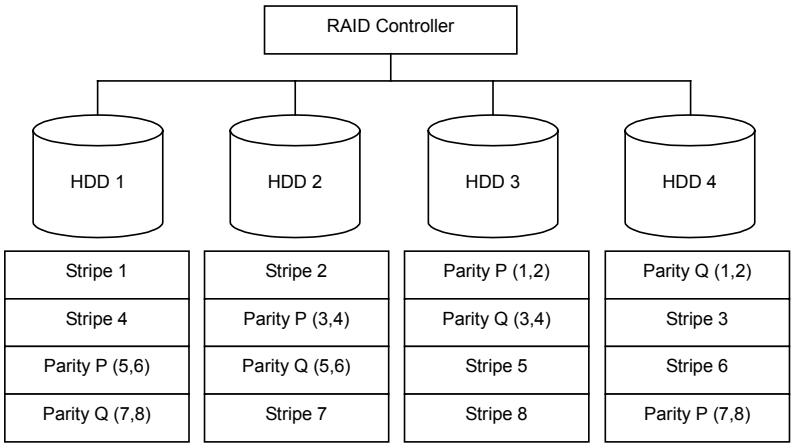
In RAID5, data is distributed to HDDs by striping and, at the same time, the parity (redundant data) is distributed to the HDDs. This mode is called "striping with distributed parity".

Each of stripe x, stripe x+1, and parity (x, x+1) created from stripe x and stripe x+1 is written onto a specific HDD. Accordingly, the total capacity assigned to the parity is just the same as the capacity of a single HDD. If any one of the HDDs configuring a logical drive is defected, data is still available with no problems.



RAID6

A RAID 6 extends RAID 5 by adding an additional parity block (Q) created by different calculation method such as weighting by some factor, thus it uses block-level striping with two parity blocks distributed across all member disks. This mode is called "striping with duplex and distributed parity". Accordingly, the total capacity assigned to the parity is just the same as the capacity of two HDDs. If any two of the HDDs configuring a logical drive are defected, data is still available with no problems.



Configuration by Onboard RAID Controller (3.5-inch Disk Model)

This section describes how to use the internal hard disk drives as RAID System by Onboard RAID Controller (LSI Embedded MegaRAID) of 3.5-inch disk model.

Installing the Hard Disk Drives

Install the two or more SAS hard disk drives to your server. See Chapter 9 for detail.

IMPORTANT: Use two hard disk drives of the same revolution. In addition, use two hard disk drives of the same capacity if you are going to configure RAID1.

Enabling RAID Feature

To configure a hard disk drive as RAID System, change the BIOS setting or the RAID System configuration jumper switch on mother board.

NOTE: The RAID System is factory-set to "Disabled".

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-12 for details.

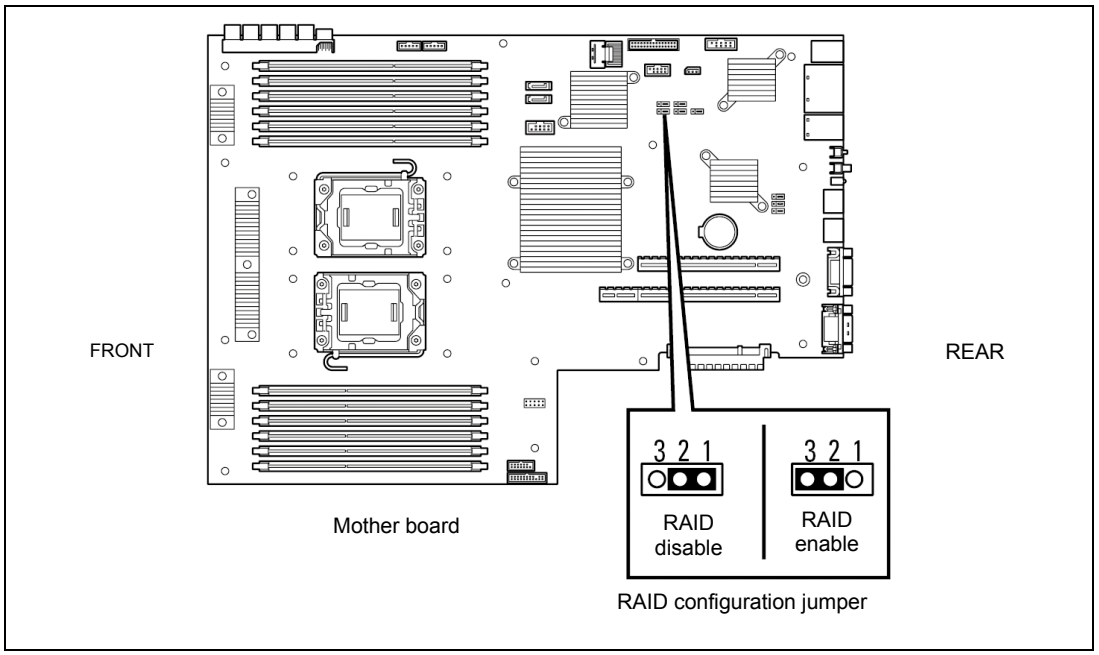
- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-12 for details.

- Make sure to complete board installation.
- Do not install the server on a rack with leaving covers removed.
- Do not pinch your finger with mechanical components.
- Note high temperature.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.

1. See the section "Preparing for Installation and Removal" as described in Chapter 9 of this guide to prepare.
2. Remove the top cover (see Chapter 9).
3. Remove the riser card (see Chapter 9).
4. Locate the position of the RAID configuration jumper on the mother board as shown below.



5. Remove the jumper from position 2 – 3 on jumper block.
6. Reinstall the jumper on position 1 – 2 on jumper block.
7. Reinstall the server removed in Step 2.
8. Plug the power cord to your server and turn on the server.
9. Run the BIOS SETUP utility described earlier in the chapter.
10. Choose the Peripheral Configuration submenu in the Advanced menu.
11. Change the options as follows.

    SATA Controller Mode Option: Enhanced

    SATA RAID: Enabled
12. Save and exit the BIOS SETUP utility

Running LSI Software RAID Configuration Utility

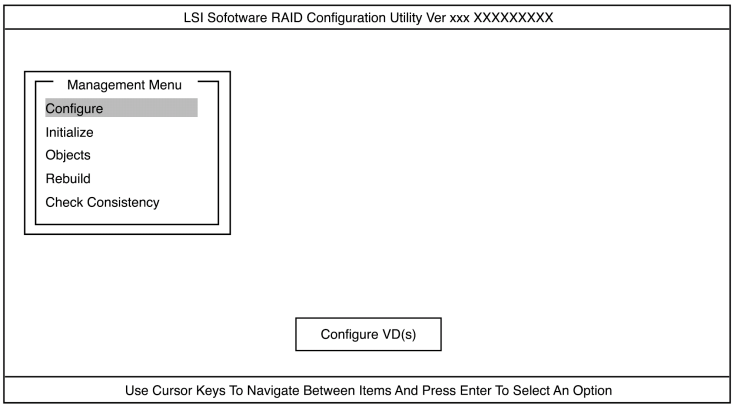
1. Power on the server.

Check the description as shown below on the POST screen, then press **Ctrl** + **M**.

```
Press <Ctrl><M> or Enter to Run LSI Software Configuration Utility
```

LSI Software RAID Configuration Utility starts.

If you fail to press **Ctrl** + **M** and the system proceeds without displaying the following menu screen, reboot the system, and press **Ctrl** + **M** on POST screen.



LSI Software RAID Configuration Utility TOP Menu (Management Menu)

To quit the utility, press **Esc** in the TOP menu of LSI Software RAID Configuration Utility.

When a confirmation message appears, select [Yes].

```
Please Press <Ctrl> <Alt> <Del> to REBOOT the system.
```

When the above message appears, press **Ctrl** + **Alt** + **Delete**.

The server is rebooted.

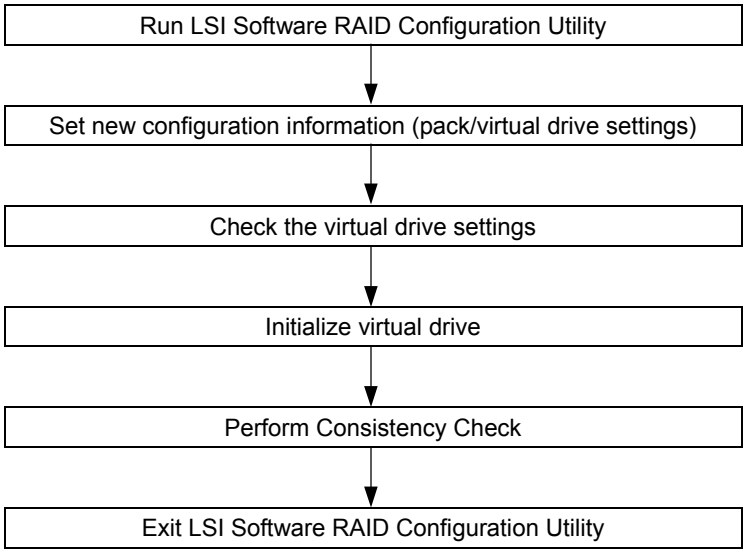
Menu Tree

+: Selection/execution parameter ✶: Setting parameter. •: Information display
>: Can be set (modified) after creation of virtual drive

Menu	Description
+Configure	Performs Configuration settings
+Easy Configuration	Set configuration (Using fixed value)
+New Configuration	Set new configuration
+View/Add Configuration	Additional setting / viewing configuration
+Clear Configuration	Clear configuration
+Select Boot Drive	Chose Bootable Virtual Drive
+Initialize	Initialize virtual drive
+Objects	Various settings
+Adapter	Set disk array controller
+Sel. Adapter	Clear configuration
✶Rebuild Rate	30
✶Chk Const Rate	30
✶FGI Rate	30
✶BGI Rate	30
✶Disk WC	Off
✶Read Ahead	On
✶Bios State	Enable
✶Cont on Error	Yes
✶Fast Init	Enable
✶Auto Rebuild	On
✶Auto Resume	Enable
✶Disk Coercion	1GB
✶Factory Default	
+Virtual Drive	Virtual drive operation
+Virtual Drives	Select virtual drive (when multiple virtual drives exist)
+Initialize	Initialize virtual drive
+Check Consistency	Check virtual drive redundancy
+View/Update Parameters	Display virtual drive information
• RAID	Display RAID level
• SIZE	Display virtual drive capacity
• Stripe SIZE	Display stripe size
• #Stripes	Display the number of hard disk drives in virtual drive
• State	Display virtual drive status
• Spans	
• Disk WC	Off: Write through On: Write back
• Read Ahead	
+Physical Drive	Physical drive operation
+Physical Drive Selection Menu	Select physical drive
+Make HotSpare	Set as hot-spare disk for auto rebuilding
+Force Online	Make a disk online
+Change Drv State	Make a disk offline or make a hot-spare ready
+Drive Properties	Display hard disk drive information
• Device Type	Hard disk drive type
• Capacity	Hard disk drive capacity
• Product ID	Hard disk drive model
• Revision No.	Hard disk drive revision
+Rebuild	Perform rebuilding
+Check Consistency	Perform virtual drive redundancy check

Operating Procedures for Configuration Utility

Creating/Adding Configuration


Run LSI Software RAID Configuration Utility
Set new configuration information (pack/virtual drive settings)
Check the virtual drive settings
Initialize virtual drive
Perform Consistency Check
Exit LSI Software RAID Configuration Utility

1. Run LSI Software RAID Configuration Utility.

Select "Configure" → "New Configuration" from the TOP menu (Management Menu).

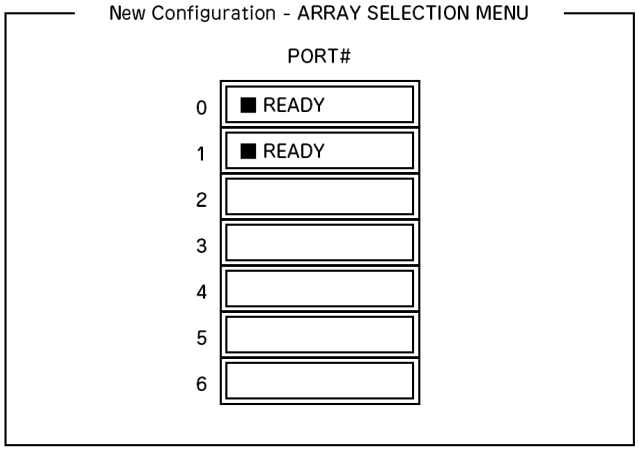
Select "View/add Configuration" to add configuration.

IMPORTANT:

- Creating a configuration using "New Configuration" menu clears the existing configuration information. To add configuration information to the existing configuration, select "View/add Configuration."
- You cannot create Spanning of RAID1 or set the virtual drive capacity on "Easy Configuration" menu.
  Use "New Configuration" or "View/Add Configuration" instead.

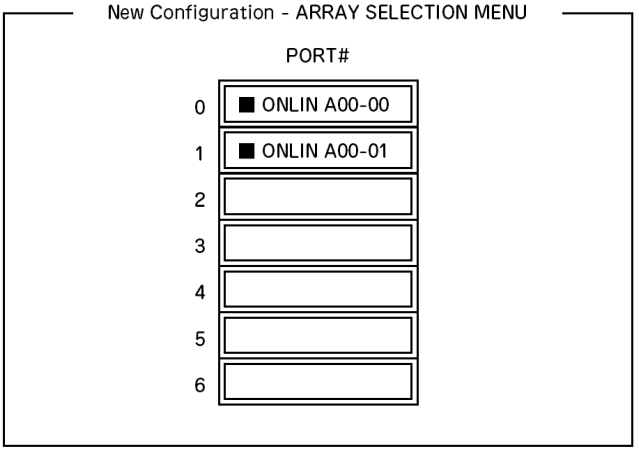
2. When a confirmation message (Proceed?) is displayed, select "Yes."

The SCAN DEVICE starts (scanning information is displayed at the bottom of the screen). Upon completion of SCAN DEVICE, the "New Configuration - ARRAY SELECTION MENU" screen appears.



3. Move the cursor onto the hard disk drive to be packed by using cursor key and then press **Space** to select the hard disk drive.

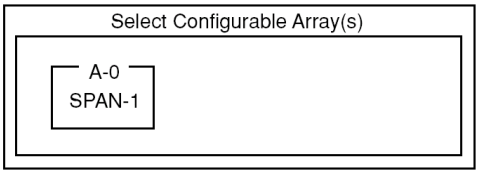
The display for the selected hard disk drive changes from READY to ONLINE.



4. Press **F10** to set "Select Configurable Array(s)".

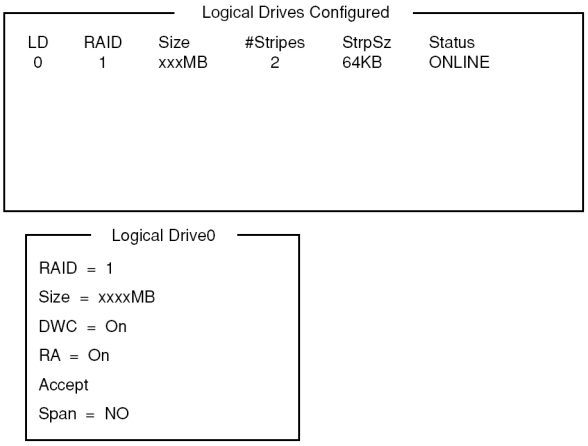
5. Press **Space**.

SPAN-1 is set.



6. Press **F10** to create virtual drive.

The "Virtual Drives Configure" screen appears. (The figure below shows an example of RAID1 configured with two hard disk drives.)



7. Select "RAID," "Size", "DWC", "RA", or "Span" by using cursor keys. Then press Enter to fix the selection and set each value.

(1) "RAID": Sets RAID level.

Parameter	Remarks
0	RAID0
1	RAID1

The selectable RAID level varies depending on the number of hard disk drives that configure a pack.

(2) "Size": Sets virtual drive size.

Up to 8 virtual drives can be created per RAID Controller.

(3) "DWC": Sets parameter for Disk Write Cache.

Parameter	Remarks
Off	Write through
On *1	Write back

*1 Recommended setting.
"Write-back On" enables good performance, however, cache data may be lost at an unexpected power failure. "Write-back Off" reduces performance by approximately 50%.

(4) "RA": Sets parameter for Read Ahead.

Parameter	Remarks
Off	Does not perform read ahead.
On *1	Performs read ahead.

*1 Recommended setting.

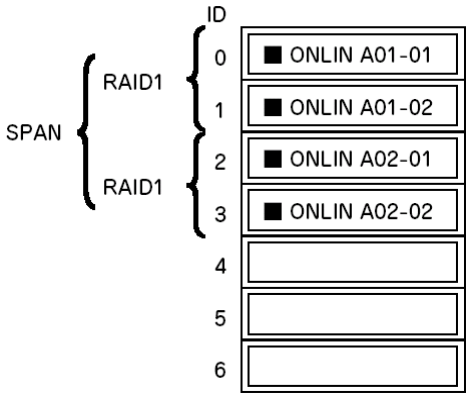
(5) "Span: Sets Span.

Parameter	Remarks
SPAN=NO *1	Does not set span.
SPAN=YES	Sets span.

*1 Recommended setting

When performing SPAN, create two or more sets of the same pack at pack creation, as shown in the figure below.

SPANNING of RAID1



8. When all settings are completed, select "Accept" and then press **Enter** to create virtual drive.

The created virtual drive is displayed in the "Virtual Drive Configured" screen.

9. After creating virtual drive, press **Esc** to close the screen.

Go back to the "Save Configuration?" screen and then select "Yes" to save the configuration.

10. When the confirmation message shows that the configuration has been saved, press **Esc** to return to the TOP menu screen.

11. On the TOP menu screen, select "Objects" → "Virtual Drive" → "View/Update Parameters" to check virtual drive information.

12. Select "Initialize" in the TOP menu screen.

13. When the "Virtual Drives" screen appears, move the cursor to the virtual drive to be initialized, and press **Space**.

The virtual drive is selected.

14. After selecting virtual drive, press **F10** to start initialization.

A confirmation screen for execution appears. Select "Yes" to start initialization.

When the progress bar in the "Initialize Virtual Drive Progress" screen indicates 100%, initialization is completed.

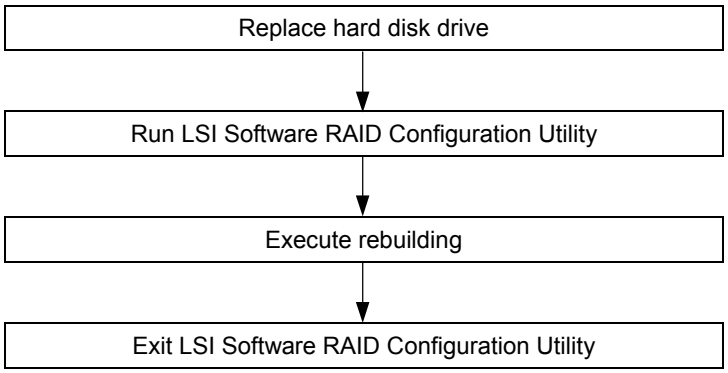
15. Execute Check Consistency on the virtual drive that has been initialized.

See "Check Consistency" for details.

16. Press **Esc** to return to the TOP menu and exit from LSI Software RAID Configuration Utility.

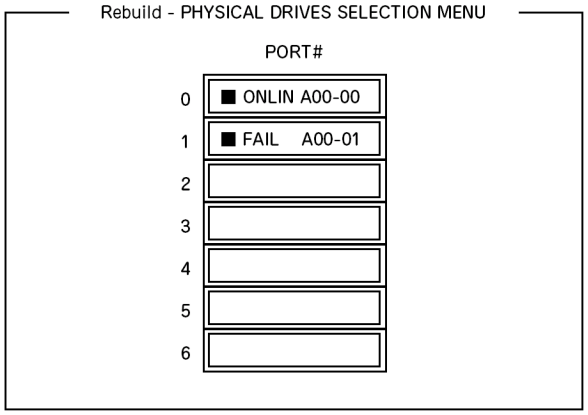
IMPORTANT: Be sure to execute Check Consistency after creating configuration. Inconsistency may be detected or corrected at Check Consistency performed immediately after the configuration has been created, however, it is not a problem.

Manual Rebuild


Replace hard disk drive
Run LSI Software RAID Configuration Utility
Execute rebuilding
Exit LSI Software RAID Configuration Utility

1. Replace a hard disk drive and turn on the server.
2. Run LSI Software RAID Configuration Utility.
3. Select "Rebuild" from the TOP menu.

   The "Rebuild – PHYSICAL DRIVES SELECTION MENU" screen appears.



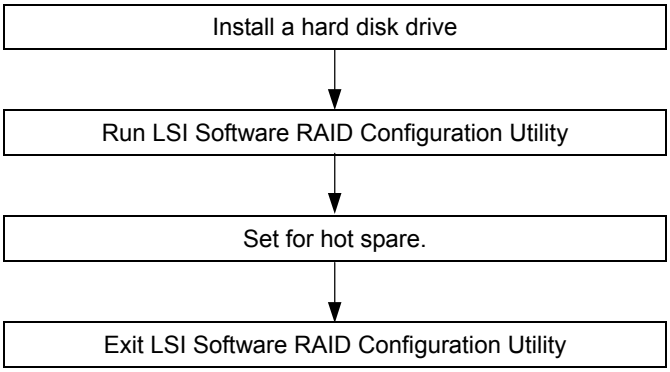
4. Move the cursor onto the hard disk drive displaying "FAIL," and then press **Space** to select it.

   Multiple hard disk drives can be selected (simultaneous rebuilding.)
5. The "FAIL" indication for the hard disk drive selected starts blinking.
6. When hard disk drive has been selected, press **F10** to start rebuilding.
7. When confirmation screen for execution appears. Select "Yes".

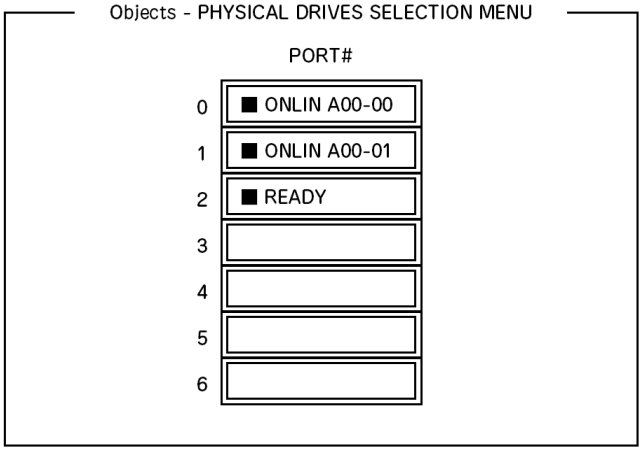
   The rebuild process starts.

   When the progress bar in the "Rebuild Physical Drives in Progress" screen indicates 100%, rebuilding is completed.
8. Press **Esc** to return to the TOP menu and exit LSI Software RAID Configuration Utility.

Setting Hot Spare

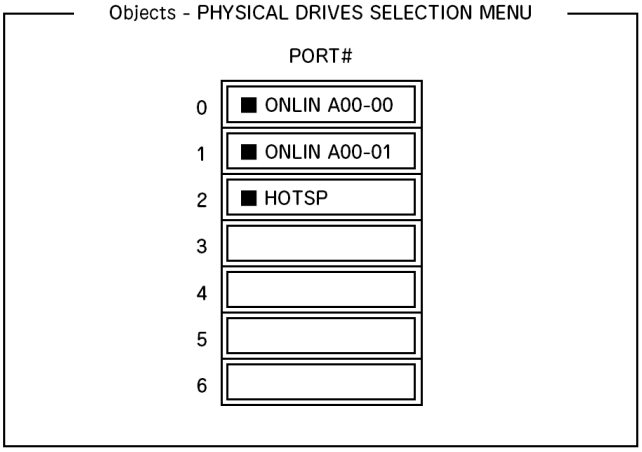

Install a hard disk drive
Run LSI Software RAID Configuration Utility
Set for hot spare.
Exit LSI Software RAID Configuration Utility

1. Install a hard disk drive to be used as hot spare, and then turn on the server.
2. Run LSI Software RAID Configuration Utility.
3. Select "Objects" → "Physical Drive" from the TOP menu.
   The "Objects - PHYSICAL DRIVE SELECTION MENU" screen appears.



4. Move the cursor onto the hard disk drive to be used as hot spare and press **Enter**.
5. The "Port #X" screen appears. Select "Make HotSpare."
6. A confirmation screen appears. Select "Yes."
   The hard disk drive indication is changed to "HOTSP."

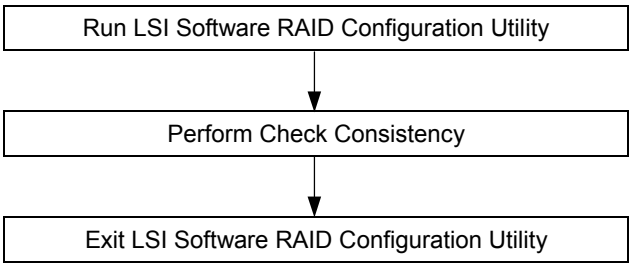
7. Press **Esc** to return to the TOP menu and exit LSI Software RAID Configuration Utility.



IMPORTANT:

- Select "Objects" → "Physical Drive" → "Port #X" → "Change Drv State" to cancel the hot spare setting.
- When two or more hard disk drives (of the same capacity) are assigned as hot spare, rebuilding is performed in order starting from the one with the smaller CH number/ID number.

Check Consistency


Run LSI Software RAID Configuration Utility
Perform Check Consistency
Exit LSI Software RAID Configuration Utility

1. Run LSI Software RAID Configuration Utility.
2. Select "Check Consistency" from the TOP menu.

   The "Virtual Drives" screen appears.
3. Move the cursor onto the virtual drive to be checked, and press **Space** to select it.
4. When virtual drive has been selected, press **F10** to start consistency check.
5. A confirmation screen for execution appears. Select "Yes".

   The consistency check starts.

   When the progress bar in the "Check Consistency Progress" screen indicates 100%, the consistency check is completed.
6. Press **Esc** to return to the TOP menu and exit LSI Software RAID Configuration Utility.

IMPORTANT: Be sure to execute Check Consistency after creating configuration.

Others

- Clear Configuration

  Clears configuration information. Select "Configure" → "Clear Configuration" from the TOP menu. Executing "Clear Configuration" clears all configuration information on the RAID Controller and hard disk drives. The configuration information on all channels of the RAID Controller is also cleared.

  NOTE: LSI Software RAID Configuration Utility cannot delete each virtual drive. Use Universal RAID Utility instead.

- Force Online

  Puts a hard disk drive being in the FAIL status online.

  Select "Objects" → "Physical Drive" → (select hard disk drive) → "Force Online" from the TOP menu.

- Rebuild Rate

  Sets the Rebuild Rate.

  Select "Objects" → "Adapter" → "Sel. Adapter" → "Rebuild Rate" from the TOP menu.

  Available value is between 0% and 100%. Default value (recommended) is 30%.

- Hard disk drive information

  Checks hard disk drive information.

  Select "Objects" → "Physical Drive" → (select hard disk drive) → "Drive Properties" from the TOP menu.

LSI Software RAID Configuration Utility and Universal RAID Utility

You can use Universal RAID Utility for configuration and management, monitoring of RAID System after start up operating system.

The point to keep in mind when I use Universal RAID Utility together with LSI Software RAID Configuration Utility is as follows.

Terms

LSI Software RAID Configuration Utility and Universal RAID Utility are different in term. When you use Universal RAID Utility together with LSI Software RAID Configuration Utility, please convert terms by the following list.

Term of LSI Software RAID Configuration Utility	Term of Universal RAID Utility
Adapter	RAID Controller
Logical Drive	Logical Drive
Array	Disk Array
Physical Drive	Physical Device

Number and ID

The number to manage each component of disk array of Universal RAID Utility is different to LSI Software RAID Configuration Utility.

Adapter and RAID Controller

LSI Software RAID Configuration Utility manages Adapter by a number beginning with 0. You can see a number of Adapter where [Sel. Adapter] in [Objects] menu. Universal RAID Utility manages RAID Controller by a number beginning with 1. You can see a number of RAID Controller where [Number] in the property of RAID Controller on RAID Viewer or [RAID Controller #X] in the property of RAID Controller on raidcmd.

Also, you can see the number of Adapter managed by LSI Software RAID Configuration Utility where [ID] in the property of RAID Controller by Universal RAID Utility.

Logical Drive

LSI Software RAID Configuration Utility manages Logical Drive by a number beginning with 0. You can see a number of Logical Drive where [Logical Drives] in [Objects] menu.

Universal RAID Utility manages Logical Drive by a number beginning with 1. You can see a number of Logical Drive where [Number] in the property of Logical Drive on RAID Viewer or [RAID Controller #X Logical Drive #Y] in the property of Logical Drive on raidcmd.

Also, you can see the number of Logical Drive managed by LSI Software RAID Configuration Utility where [ID] in the property of Logical Drive by Universal RAID Utility.

Disk Array

LSI Software RAID Configuration Utility manages Disk Array by a number beginning with 0. You can see a number of Disk Array where [Axx] of [Objects - PHYSICAL DRIVE SELECTION MENU] DG X] in [Objects] menu.

Universal RAID Utility manages Disk Array by a number beginning with 1. You can see a number of Disk Array where [Disk Array] in the property of Logical Drive on RAID Viewer or [RAID Controller #X Disk Array #Y] in the property of Disk Array on raidcmd.

Physical Drive and Physical Device

LSI Software RAID Configuration Utility manages Physical Drive by ID. You can see ID of Physical Drive where [Port #] of [Objects - PHYSICAL DRIVE SELECTION MENU] DG X] in [Objects] menu.

Universal RAID Utility manages Physical Device by a number beginning with 1 and ID. The ID is same value of ID on LSI Software RAID Configuration Utility. You can see a number and ID of Physical Device where [Number] and [ID] in the property of Physical Device on RAID Viewer or [RAID Controller #X Physical Device #Y] and [ID] in the property of Physical Device on raidcmd.

Setting of Priority

LSI Software RAID Configuration Utility displays and sets Rebuild Priority and Consistency Check Priority of RAID Controller by percentage. But, Universal RAID Utility uses three levels as High/Middle/Low for them.

The setting value of LSI Software RAID Configuration Utility and the display level of Universal RAID Utility

Item	Setting value of LSI Software RAID Configuration Utility	Universal RAID Utility Level
Rebuild Priority Rebuild Rate (LSI Software RAID Configuration Utility)	15 to 100	High
	8 to 14	Middle
	0 to 7	Low
Consistency Check Priority Chk Const Rate (LSI Software RAID Configuration Utility)	15 to 100	High
	8 to 14	Middle
	0 to 7	Low

The setting level of Universal RAID Utility and the setting value

Item	Setting level of Universal RAID Utility	Setting value
Rebuild Priority Rebuild Rate (LSI Software RAID Configuration Utility)	High	20
	Middle	10
	Low	5
Consistency Check Priority Chk Const Rate (LSI Software RAID Configuration Utility)	High	20
	Middle	10
	Low	5

NOTES:

- LSI Software RAID Configuration Utility can set FGI Rate (Foreground Initialize) and BGI Rate (Background Initialize Priority). But Universal RAID Utility can't set it.
- Universal RAID Utility can set Initialization Priority, but it can't set it to the LSI Embedded MegaRAID. Therefore, Universal RAID Utility doesn't display [Initialization Priority] in the property of RAID Controller. Also, it will fail that you change the Initialization Priority by raidcmd.

Configuration by Internal RAID Controller (2.5-inch Disk Model)

This section describes how to use the internal hard disk drives as RAID System by Internal RAID Controller (equivalent to N8103-116A) of 2.5-inch disk model.

Rebuild

If a HDD is defected, the rebuild feature can recover the data in the defected HDD. The rebuild can be applied to redundant virtual disks in the RAID1, RAID5, or RAID6 level.

Manual Rebuild

The manual rebuild can be performed by using Universal RAID Utility, the management utility of the Internal RAID Controller (equivalent to N8103-116A). Select a HDD and start the rebuild manually.

For the detailed operation, refer to the "Universal RAID Utility Ver2.0 User's Guide" in NEC EXPRESSBUILDER DVD that comes with the server.

Auto Rebuild

The Internal RAID Controller (equivalent to N8103-116A) can automatically start the rebuild without use of any utility such as Universal RAID Utility.

The auto rebuild includes two types as follows:

- Standby rebuild

  Automatic rebuild by using hot-spares. In the configuration including hot-spares, the rebuild is performed automatically if a HDD assigned to a virtual disk is defected.

- Hot-swap rebuild

  Automatic rebuild by hot-swapping defected HDD.

IMPORTANT: Note the following for the rebuild:

- The HDD used for rebuild should have the same capacity, rotation speed, and standard as the defected HDD.
- During rebuild, the processing rate is decreased due to much load.
- During rebuild, do not shutdown or reboot the server. If the server is shutdown by an unforeseen accident such as power interruption, turn on the power again as soon as possible. The rebuild is automatically restarted.
- The interval from the removal of the defected HDD to the installation of a substitute HDD should be 60 sec or longer.
- If the hot-swap rebuild does not operate, perform the manual rebuild.

Patrol Read

The patrol read gives the read & verify test in the entire area of HDDs. It can be performed for all HDDs assigned to virtual disks and hot-spares.

The Patrol Read allows subsequent defects of HDDs to be detected and repaired.

For HDDs configuring redundant virtual disks or those assigned to hot-spares, error sectors detected during Patrol Read can be repaired.

IMPORTANT: Note the following for the patrol read:

- For the Internal RAID Controller (equivalent to N8103-116A), Patrol Read feature is factory-set to "Enabled".
- To change settings of Patrol Read, use Universal RAID Utility.
- If the system is restarted while running Patrol Read, Patrol Read resumes from that point.

Consistency Check

The Consistency Check is used to check consistency among virtual drives. It is available for redundant virtual drives except for RAID0. It is also available for host spare.

Consistency Check can be performed through WebBIOS or Universal RAID Utility.

Consistency Check performs not only consistency check but also repair of error sectors. Accordingly, it can be used as preventive maintenance.

IMPORTANT: Note the following for Consistency Check:

- During Consistency Check, the processing rate is decreased due to much load.
- If the system is restarted, the Consistency Check is aborted. However, the Consistency Check resumes after restart.
- To schedule execution of Consistency Check, use WebBIOS, not the Universal RAID Utility

Background Initialize

The Background Initialize is automatically executed when RAID5 virtual disk is created in the disk group composing of five or more HDDs.

The Background Initialize performs the parity generation processing in the background to the area not initialized. The processing is equivalent to that of Consistency Check.

However, the Background Initialize is not performed in the following cases.

- Full Initialize has already been executed and completed normally before executing Background Initialize.

  (*) Full Initialize is a function to clear the entire area of a virtual disk with "0".

- Consistency Check has already been executed and completed normally before executing Background Initialize.
- Rebuild has already been executed and completed normally before executing Background Initialize (for RAID5 only).
- "Yes" is specified for "Disable BGI" in VD Definition.
- Virtual disk is in degraded or offline state.
  Background Initialize is performed if the virtual disk of RAID6 is partially degraded.

The Background Initialize is executed again if any of the following cases occurred in the virtual disk on which the Background Initialize has completed.

- When the virtual disk is degraded or offline, you execute Make Online to HDD being in offline status, and the virtual disk becomes Optimal state.
- When you replace the RAID Controller with the maintenance parts and others.
- When you execute Reconstruction to existing virtual disk to make RAID5 VD with five or more HDDs.

IMPORTANT: Note the following for Background Initialize:

- During Background Initialize, the processing rate is decreased due to much load.
- Background Initialize will resume a few minutes later even if it is interrupted.

Reconstruction

The reconstruction feature is used to change configuration and/or RAID level of existing virtual disk. The Reconstruction contains the following three features, however, the Internal RAID Controller (equivalent to N8103-116A) supports "Migration with addition" only.

> **IMPORTANT:** You can use WebBIOS for Reconstruction. Universal RAID Utility does not support Reconstruction.

Removed physical drive

Unsupported.

Migration only

Unsupported.

Migration with addition

Use this feature to add HDDs to existing virtual disk. The execution patterns are as shown below (α: Number of HDDs to be added).

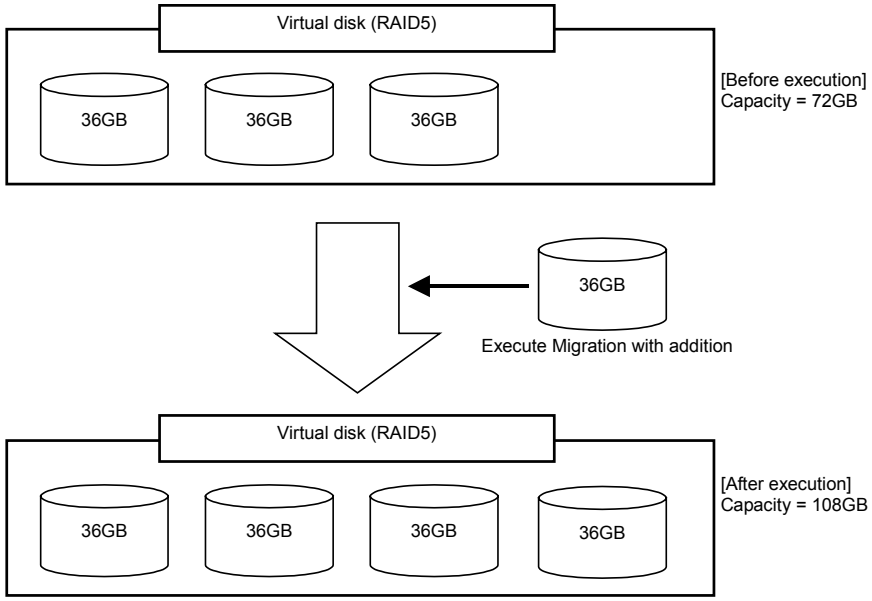
Before execution		After execution		Description
RAID level	Number of HDDs	RAID level	Number of HDDs	
RAID0	x	RAID0	x+α	Capacity increased: equivalent to α HDDs
RAID0	1	RAID1	2	Capacity remains unchanged.
RAID0	x	RAID5	x+α	Capacity increased: equivalent to α-1 HDDs
RAID0	x	RAID6	x+α (α=2 or more)	Capacity increased: equivalent to α-2 HDDs
RAID1	2	RAID0	2+α	Capacity increased: equivalent to α+1 HDDs
RAID1	2	RAID5	2+α	Capacity increased: equivalent to α HDDs
RAID1	2	RAID6	2+α	Capacity increased: equivalent to α-1 HDDs
RAID5	x	RAID0	x+α	Capacity increased: equivalent to α+1 HDDs
RAID5	x	RAID5	x+α	Capacity increased: equivalent to α HDDs
RAID5	x	RAID6	x+α	Capacity increased: equivalent to α-1 HDDs
RAID6	x	RAID0	x+α	Capacity increased: equivalent to α+2 HDDs
RAID6	x	RAID5	x+α	Capacity increased: equivalent to α+1 HDDs
RAID6	x	RAID6	x+α	Capacity increased: equivalent to α HDDs

IMPORTANT: Note the following for the Reconstruction:

- Be sure to make backup copy of data and perform Consistency Check before starting Reconstruction.
- The Reconstruction is disabled in the configuration where several virtual disks are defined in one disk group
- During Reconstruction, the processing rate is decreased due to much load.
- The Reconstruction can be performed for the degraded or partially degraded virtual disk. However, it is recommended to execute Rebuild to recover the virtual disk, then execute Reconstruction.
- During Reconstruction, do not shutdown or reboot the server. If the server is shutdown by an unforeseen accident such as power interruption, turn on the power again as soon as possible. The Reconstruction is automatically restarted.
- In some configuration, Background Initialize may start automatically upon completion of Reconstruction.

Ex: Migration with addition for RAID5 virtual disk

The figure below shows an example of adding a single 36GB HDD to a RAID5 virtual disk configured with three 36GB HDDs.



Before Using WebBIOS

Read the following sections describing supported functions and precautions before using "WebBIOS".

Supported Functions

- Indication of model name and capacity of Hard Disk Drive
- Indication of allocation status of Hard Disk Drive
- Creation of virtual drive
  - Setting of RAID level
  - Setting of Stripe Block size
  - Setting of Read Policy/Write Policy/IO Policy
- Indication of configuration information and status of virtual drive
- Removal of virtual drive
- Clearing of configuration
- Execution of initialization
- Execution of Consistency Check
- Execution of manual rebuild
- Execution of reconstruction

Notes on Creating Virtual Drive

1. The Hard Disk Drives configuring the drive group should have the same capacity and rotation speed.
2. Be sure to execute Consistency Check after creating VD.
3. When installing an OS in VD under the Internal RAID Controller (equivalent to N8103-116A), create a VD dedicated to OS installation.
4. WebBIOS cannot be handled via remote console functions of NEC ESMPRO Manager.
5. The physical drive numbers shown in WebBIOS and those shown in Universal RAID Utility are identified as follows.
   - WebBIOS

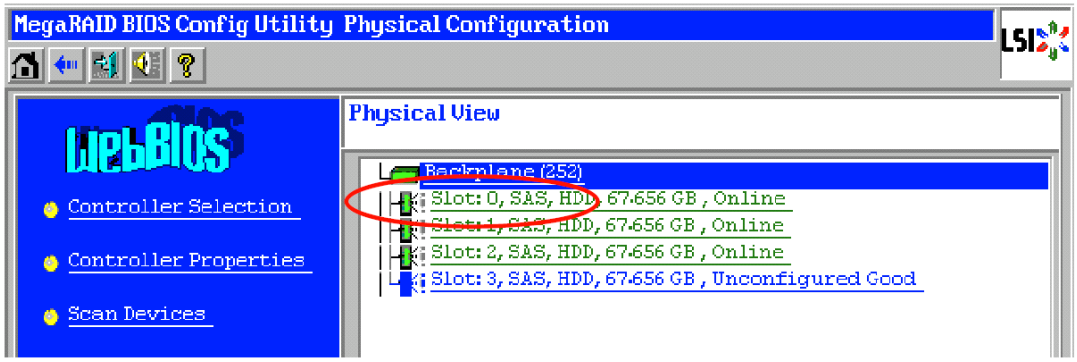
     Slot number shown in Physical View *

     *1: The slot number, type of Hard Disk Drive, its capacity, and its current status are shown in Physical View.

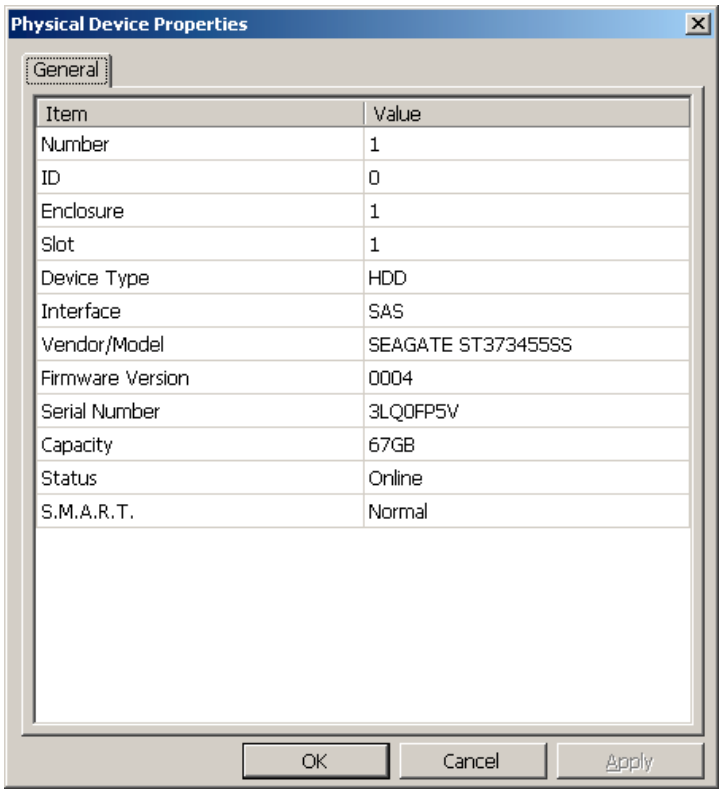
     The slot number is indicated by the number 0 to 7. It represents the slot number in the Hard Disk Drive.
   - Universal RAID Utility

     ID shown in Physical Device Properties

     The slot number shown on WebBIOS corresponds to the physical device ID shown on Universal RAID Utility. For more information, refer to the Universal RAID Utility User's Guide.


MegaRAID BIOS Config Utility Physical Configuration
LSI
WebBIOS
Controller Selection
Controller Properties
Scan Devices
Physical View
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB , Online
Slot: 1, SAS, HDD, 67.656 GB , Online
Slot: 2, SAS, HDD, 67.656 GB , Online
Slot: 3, SAS, HDD, 67.656 GB , Unconfigured Good

Physical View of WebBIOS



Property of Physical Device of Universal RAID Utility

Using WebBIOS

Starting WebBIOS

1. When the screen as shown below appears, press **Ctrl** + **H** to start WebBIOS.

```
LSI MegaRAID SAS - MFI BIOS
Version XXXX (Build MMM DD, YYYY)
Copyright (c) 20XX LSI Corporation
HA - X (Bus X Dev X) MegaRAID SAS 8708EM2
FW package: X.X.X - XXXX
0 Virtual Drive(s) found on the host adapter.
0 Virtual Drive(s) handled by BIOS.
Press <Ctrl> <H> for WebBIOS.....
```

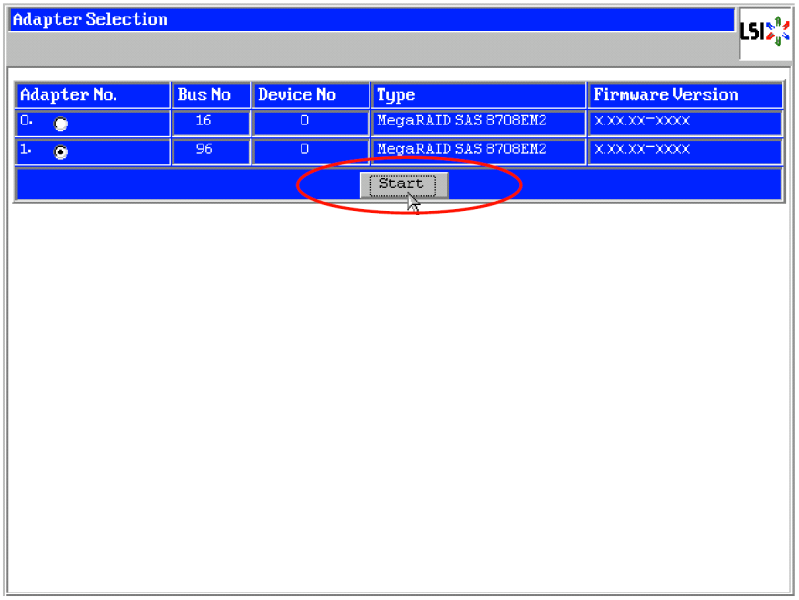
POST screen image (with no virtual drive assigned)

IMPORTANT:

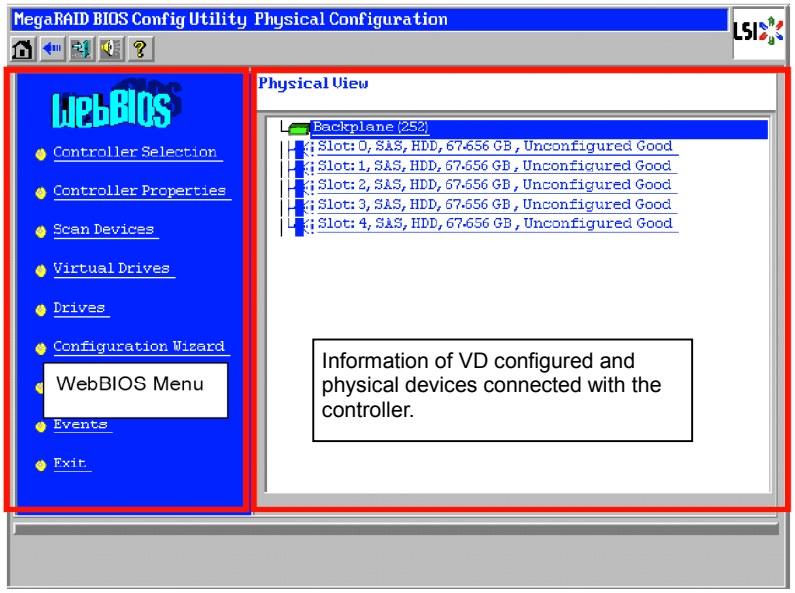
- Do not press unnecessary key such as **Pause** during POST.
- If you fail to press **Ctrl** + **H** or the system proceeds without displaying the WebBIOS main menu (shown on the next page), reboot the system, and press **Ctrl** + **H** on POST screen.

Main Menu

Shown below is [Adapter Selection] screen that appears first on WebBIOS. On [Adapter No.] box, select an adapter you want to operate with WebBIOS, then click [Start].



When the adapter is selected on [Adapter Selection], the WebBIOS Top Menu appears.


MegaRAID BIOS Config Utility Physical Configuration
WebBIOS
Controller Selection
Controller Properties
Scan Devices
Virtual Drives
Drives
Configuration Wizard
Events
Exit
WebBIOS Menu
Physical View
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB, Unconfigured Good
Slot: 1, SAS, HDD, 67.656 GB, Unconfigured Good
Slot: 2, SAS, HDD, 67.656 GB, Unconfigured Good
Slot: 3, SAS, HDD, 67.656 GB, Unconfigured Good
Slot: 4, SAS, HDD, 67.656 GB, Unconfigured Good
Information of VD configured and physical devices connected with the controller.

WebBIOS Menu

Controller Selection:	Goes back to Adapter Selection menu.
Controller Properties:	Displays properties of the controller.
Scan Devices:	Detects Hard Disk Drives connected with the controller again.
Virtual Drives:	Opens operation window for VD that has already been configured.
Drives:	Opens operation window for Hard Disk Drive connected with the controller.
Configuration Wizard:	Displays the wizard to configure VD.
Physical View / Logical View:	Switches indication between Hard Disk Drives and VD configuration.
Events:	Displays event data.
Exit:	Goes to Exit menu of WebBIOS.

Status Indication of Virtual Drive (not shown on Physical View)

Optimal:	Indicates that the VD is in normal state. The indication is green.
Partially Degraded:	Indicates that one of the Hard Disk Drives in the relevant VD is degraded in RAID6 configuration. The indication is blue.
Degraded:	Indicates that one or two of the Hard Disk Drives in the relevant VD is degraded in RAID6 configuration. The indication is blue.
Offline:	The relevant VD is in offline state. The indication is red.
Initialization:	The relevant VD is being initialized.
ConsistencyCheck:	Consistency Check is being performed to the relevant VD.
Rebuild:	The relevant VD is being rebuilt.
BackGroundInitialize:	The relevant VD is being initialized in background.

Status Indication of Hard Disk Drive

Reconstruction:	The relevant VD is being reconstructed.
Unconfigured Good:	The Hard Disk Drive connected with the controller is not in use. The indication is blue.
Online:	Indicates that the Hard Disk Drive in configuration is in normal state. The indication is green.
Offline:	Indicates that the Hard Disk Drive in configuration is in offline state. The indication is red.
Unconfigured Bad:	The relevant Hard Disk Drive is faulty. (The Hard Disk Drive in this status can be checked only on Physical View.) The indication is black.
Rebuild	The relevant Hard Disk Drive is being rebuilt. The indication is yellow.
Hotspare	Indicates the Hard Disk Drive that is assigned to hot-spare. The indication is pink.

IMPORTANT:

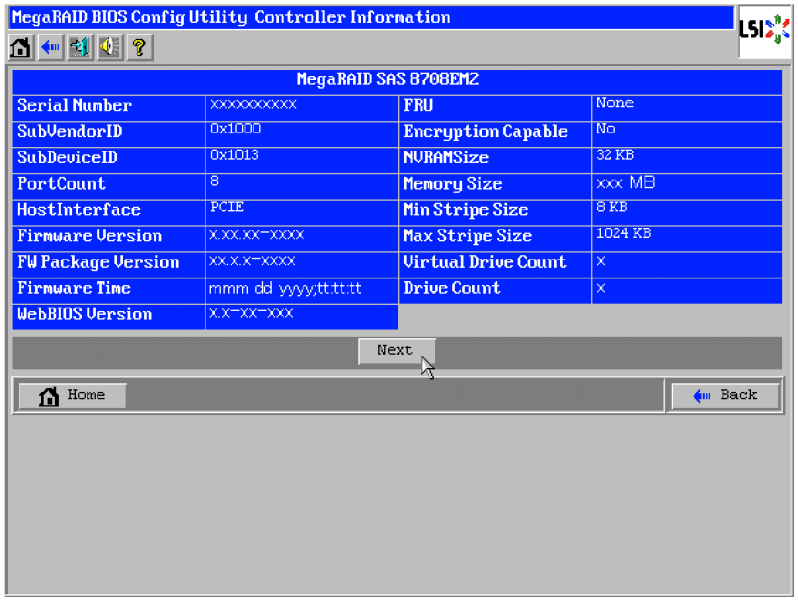
- The right frame of Physical View shows slot number, type, capacity, and status of Hard Disk Drive.
- The slot number is represented by the number between 0 and 7. It indicates the slot number of the Hard Disk Drive bay.
- The controller does not support the Events feature.

NOTE: S.M.A.R.T status

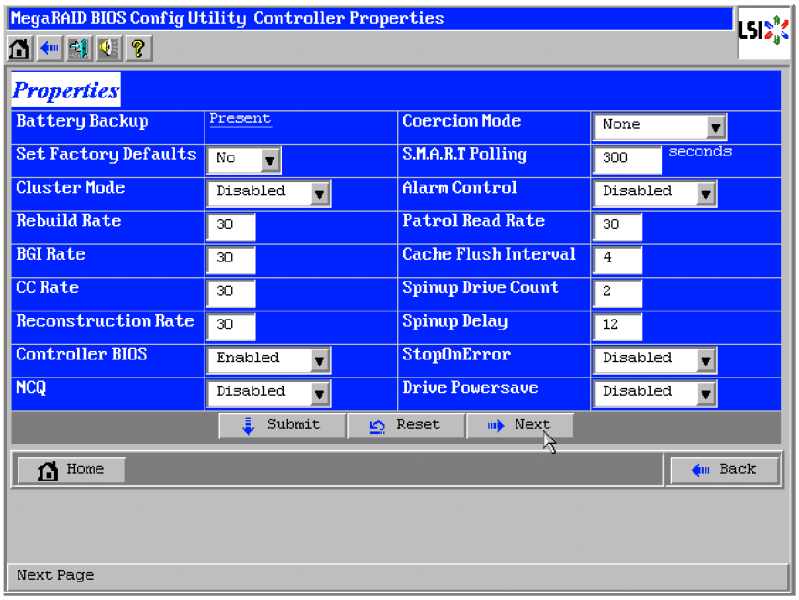
- The information of the Hard Disk Drive that has one or more Pred Fail Count is displayed in yellow.
- Indicates that the device has failed in the past. You can use the device as usual, however, we recommend you to replace it with new one.

Controller Properties

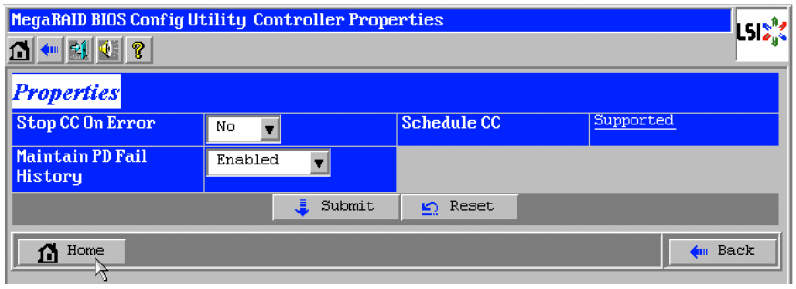
When you click [Controller Properties] on WebBIOS Top Menu, the configuration information is displayed.



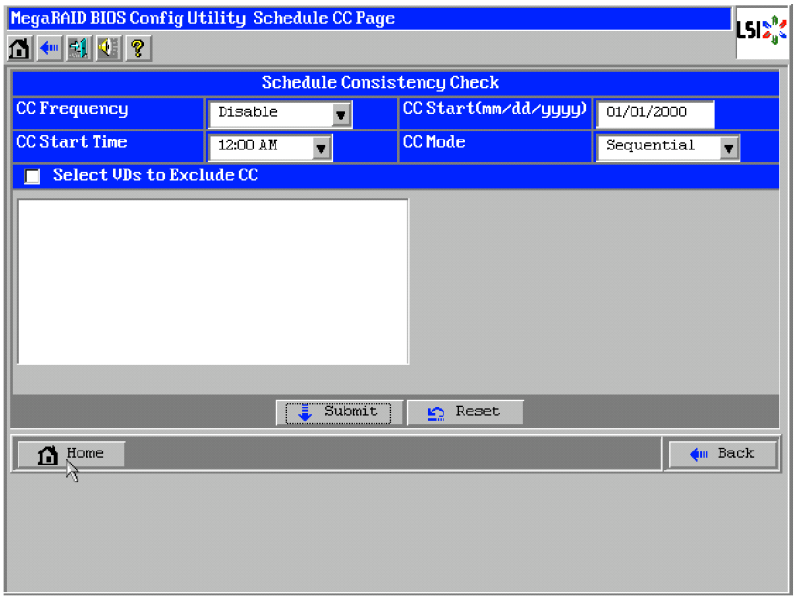
Click [Next] to see the detailed settings of this controller.



The detailed setting is continued on the next page. Click [Next] to view more information.



Clicking [Supported] in "Schedule CC" opens the screen for setting scheduled consistency check.



Default settings and their explanation

Item	Default	Description	Change
Battery Backup	Present None	Displays Properties of additional battery. • When battery is installed: Present • When battery is not installed: None	–
Set Factory Defaults	No	–	Prohibited *1
Cluster Mode	Disabled	–	Prohibited
Rebuild Rate	30	Recommended value: 30	Permitted
BGI Rate	30	Recommended value: 30	Permitted
CC Rate	30	Recommended value: 30	Permitted
Reconstruction Rate	30	Recommended value: 30	Permitted
Controller BIOS	Enabled	–	Prohibited
NCQ	Disabled	–	Prohibited
Coercion Mode	None	–	Prohibited
S.M.A.R.T Polling	300	–	Prohibited
Alarm Control	Disabled	Disabled: Does not issue an alarm. Enabled: Issues an alarm. Silence: Stops an alarm if beeped.	Permitted *2
Patrol Read Rate	30	Recommended value: 30	Permitted
Cache Flush Interval	4	–	Prohibited
Spinup Drive Count	2	–	Prohibited
Spinup Delay	12	–	Prohibited
StopOnError	Disabled	–	Prohibited
Drive Powersave	Disabled	–	Prohibited
Stop CC On Error	No Yes	Specify the operation at error detection in Consistency Check. No: Recover and resume. Yes: Abort	Permitted
Maintain PD Fail History	Enabled	–	Prohibited
Schedule CC	Supported	Set the scheduled consistency check.	Permitted

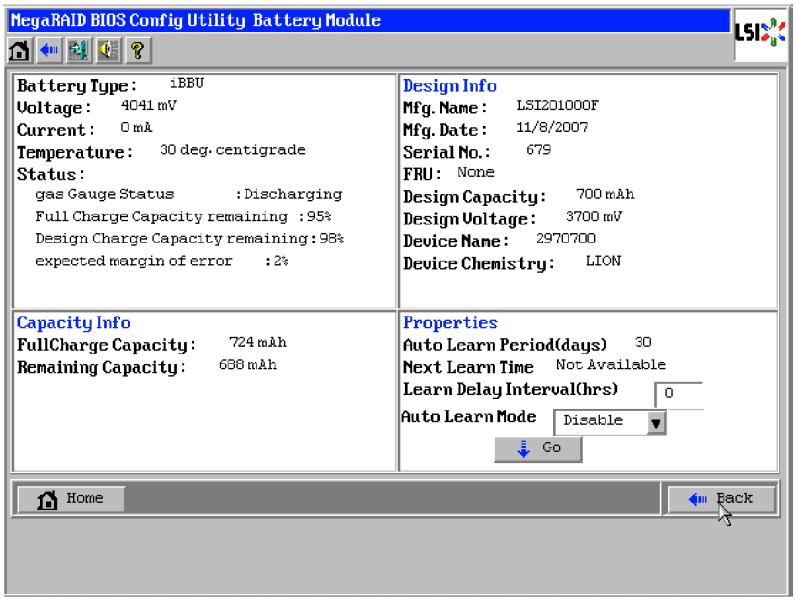
*1 Do not perform "Set Factory Defaults". If performed, the NEC's factory-set value will no longer be restored.

*2 If Alarm Control is set to "Enabled", the server issues an alarm sound when the VD is degraded due to failure of Hard Disk Drive.

How to change setting value

On [Controller Properties] screen, change a parameter to desired value, and then click [Submit] at the center of the screen to determine the new value.

If the additional battery is installed, the status of "Battery Backup" is indicated as "Present". Clicking [Present] opens the Battery Status screen as shown below.



IMPORTANT: You cannot change values for "Auto Learn Period", "Next Learn Time", and "Learn Delay Interval".

NOTES:

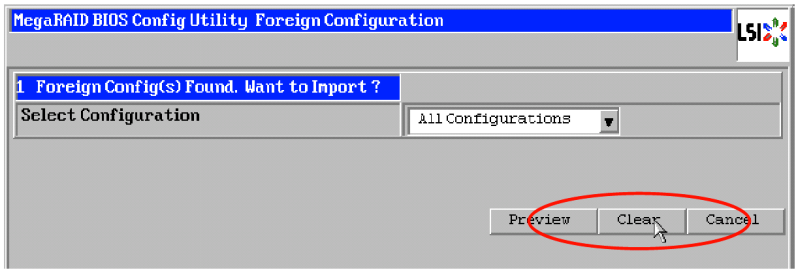
- The value shown in "Current" field indicates battery status.
  – Positive value: Battery is being charged
  – Negative value: Battery is being discharged.
- WebBIOS does not refresh the indication on window. To view the indication, change window (e.g., go back to Top Menu), then check status again.

Scan Devices

When you click [Scan Devices] on WebBIOS Top Menu, the connected Hard Disk Drives are detected again. Use this feature when you have installed a new Hard Disk Drive additionally while the WebBIOS is running.

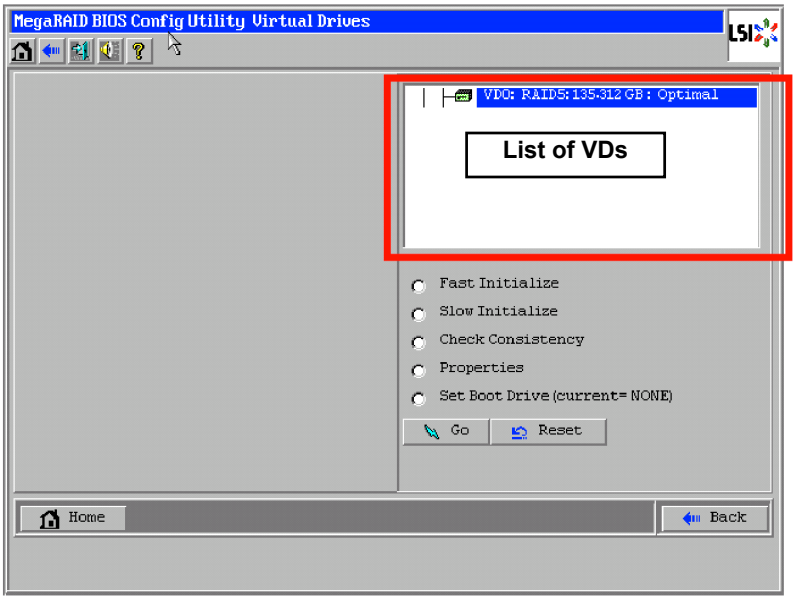
IMPORTANT:

- If the newly connected Hard Disk Drive contains another configuration information, [Foreign Configuration] screen as shown below appears. To use the Hard Disk Drive as new one, click [Clear] to clear the configuration information in Hard Disk Drive.
- If you want to create a logical drive by using the Universal RAID Utility with the newly connected Hard Disk Drive containing another configuration information, first clear another configuration information using this Scan Devices feature.
  (*) Universal RAID Utility does not have this feature.



Virtual Drives

When you click [Virtual Drives] on WebBIOS Top Menu, the screen for operating the VD that has already been configured. List of VDs box shows existing VDs.



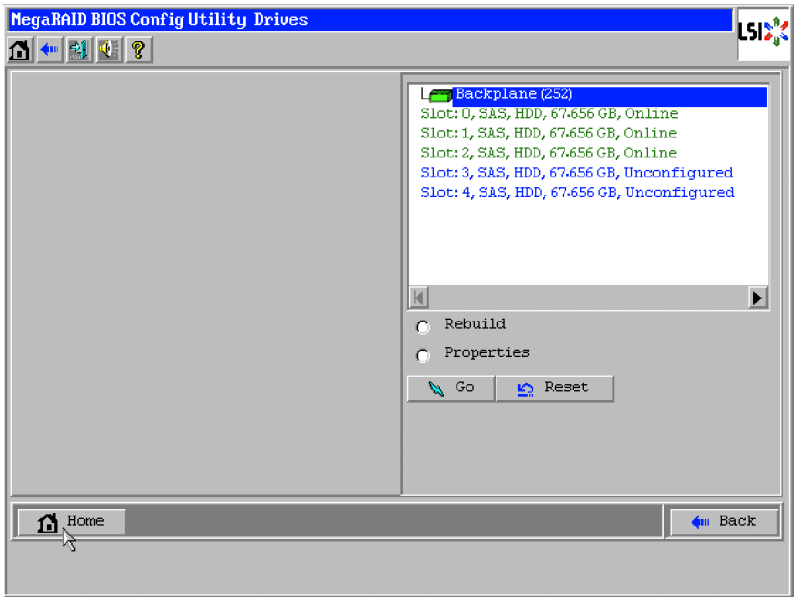
Fast Initialize:	Clears the top area of the VD being selected in List of VDs box.
Slow Initialize:	Clears whole area of the VD being selected in List of VDs box.
Check Consistency:	Checks consistency in the whole area of the VD being selected in List of VDs box. If inconsistency is found, correct it.
Properties:	Displays the properties of the VD being selected in List of VDs box.
Set Boot Drive (Current =XX): Default: NONE	Selects a VD to start operating system. If the system contains several VDs and you want to start the operating system from the VD other than VD0, you need to specify the boot drive manually as shown below. Use the default setting in any other cases. [Setting procedure] 1. Select a VD you want to start operating system from the List of VDs box. 2. Put a checkmark on "Set Boot Drive (Current =XX)". 3. Click [Go].

IMPORTANT:

- If no virtual drive exists, the List of VDs box will be blank. Use this menu only when a virtual drive exists.
- Even the "Set Boot Drive" is properly specified, the operating system may fail to start due to Boot Priority specified in BIOS SETUP of the server.
- Inconsistency may be detected at the first Check Consistency performed after the VD was configured.

Drives

When you click [Drives] on WebBIOS Top Menu, the screen for operating the connected physical drive appears.

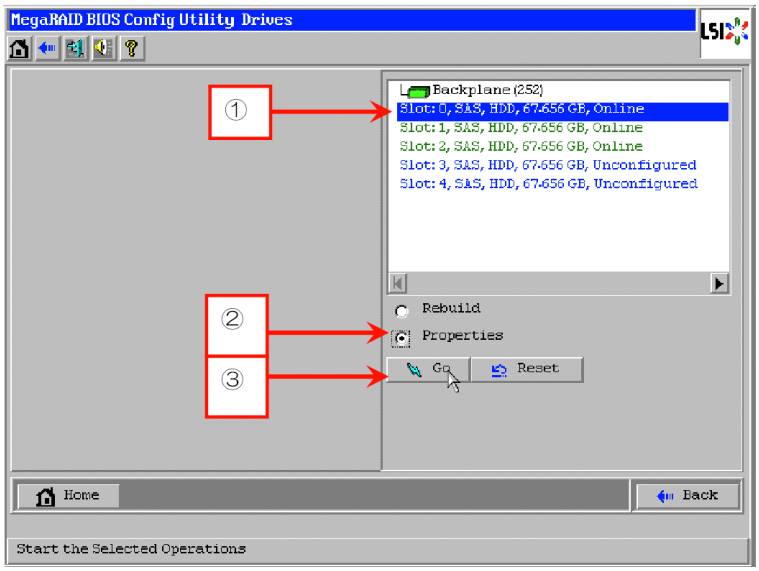


IMPORTANT: If no device is connected, the upper right column of the screen will be blank. Use this menu only when a Hard Disk Drive is being connected.

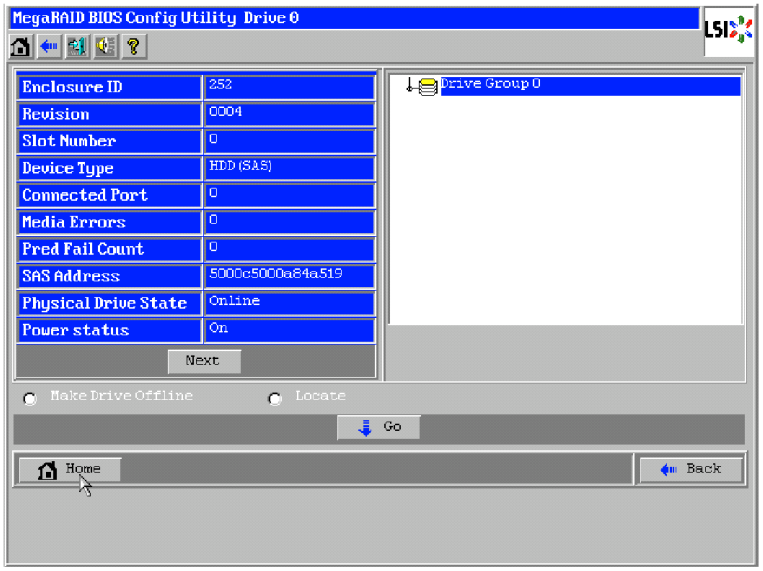
Physical Drive Properties

Take the following procedures to check Physical Drive Properties. Shown below is an example to check property of physical drive.

1. Click the Physical Drive you want to check.
2. Click the checkbox for [Properties].
3. Click [Go].



The Properties screen as shown below appears.



Physical Drive Properties

Locate:	Let Disk Status lamp light or blinks.
Make Global HSP:	The selected Hard Disk Drive is assigned as hot-spare available for all DGs.
Make Dedicated HSP:	The selected Hard Disk Drive is assigned as hot-spare available only for the specific DG.
Remove HOTSPARE:	The selected Hard Disk Drive is unassigned from hot-spare and made Unconfigured Good state.
Make Unconf Bad:	Make the selected Hard Disk Drive in faulty state. This is indicated on the Hard Disk Drive of which status is "Unconfigured Good".
Make Unconf Good	Make the selected Hard Disk Drive in "Unconfigured Good" state. This is indicated on the Hard Disk Drive of which status is "Unconfigured Bad".
Prepare Removal:	Make the power status of the selected Hard Disk Drive in "Powersave" state. This is indicated on the Hard Disk Drive of which power status is "On" and the status is "Unconfigured Good".
Undo Removal:	Make the power status of the selected Hard Disk Drive in "On". This is indicated on the Hard Disk Drive of which power status is "Powersave".
Make Dive Offline:	Make the selected Hard Disk Drive in "Offline" state. This is indicated on the Hard Disk Drive of which status is "Online".
Make Drive Online:	Make the selected Hard Disk Drive in "Online" state. This is indicated on the Hard Disk Drive of which status is "Offline".
Rebuild Drive:	Start rebuilding VD that contains the selected Hard Disk Drive. This is indicated for the Hard Disk Drive of which status is "Offline".
Mark as Missing:	Remove the VD that contains the selected Hard Disk Drive from the DG. This is indicated on the Hard Disk Drive of which status is "Offline".

IMPORTANT: The RAID Controller does not support Events feature.

Configuration Wizard

Use this wizard to configure a virtual drive using the Hard Disk Drives connected. The detailed explanation of this feature is given in "Configuring Virtual Drive".

Controller Selection

If one or more RAID controllers are installed in the server, you need to select an adapter controlled by WebBIOS to configure each adapter. Clicking [Controller Selection] on WebBIOS top menu opens the [Adapter Selection] screen.

Physical View / Logical View

If the virtual drive has been configured, DG (drive group) is displayed on WebBIOS Top Menu. Clicking [Physical View] displays information for Hard Disk Drives in DG. Clicking [Logical View] displays virtual drive in DG.

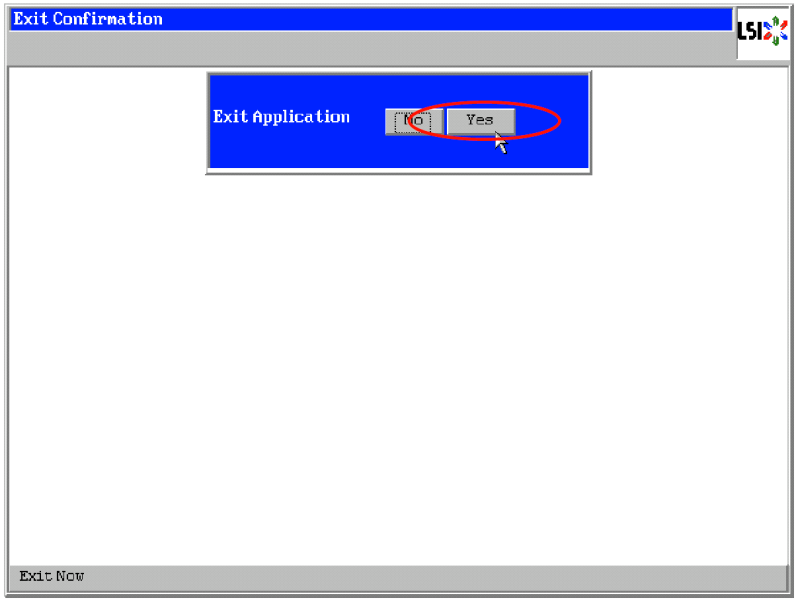
Events

The Events screen is used to confirm the system events.

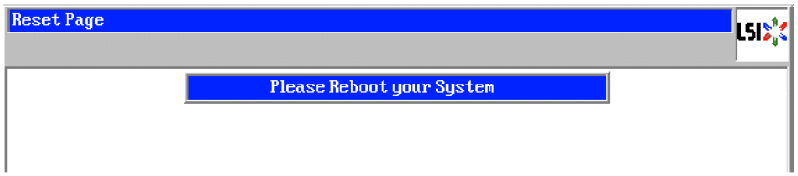
IMPORTANT: The RAID Controller does not support Events feature.

Exit

When you click [Exit] on WebBIOS Top Menu, a confirmation screen to exit from WebBIOS is displayed. Click [Yes] to exit from WebBIOS.



The screen as shown below appears when WebBIOS is terminated. Restart the server.

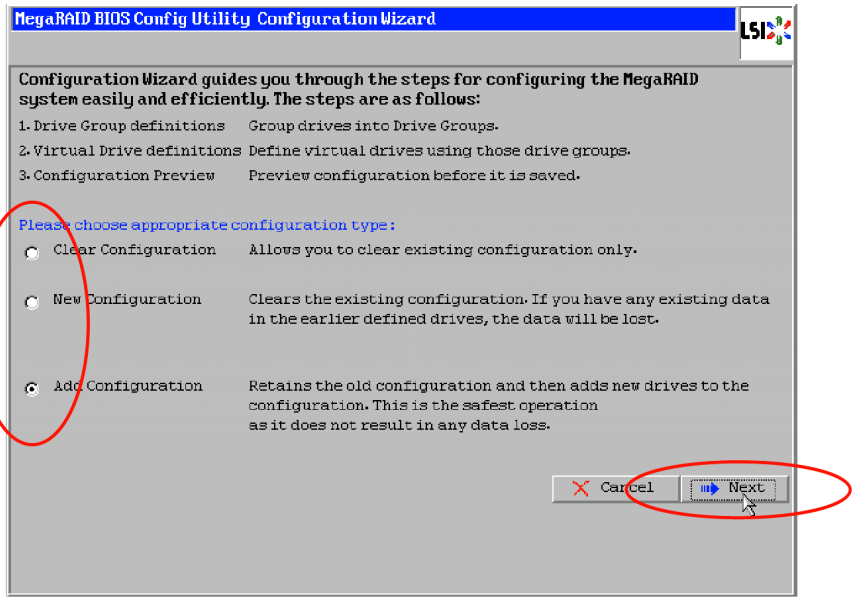


Configuring Virtual Drive

This section describes the procedures for configuration of VD (virtual drive) using WebBIOS.

Configuration Wizard

When you click [Configuration Wizard] on WebBIOS Top Menu, the screen as shown below appears. Select the relevant operation, and click [Next] at lower right of the screen.

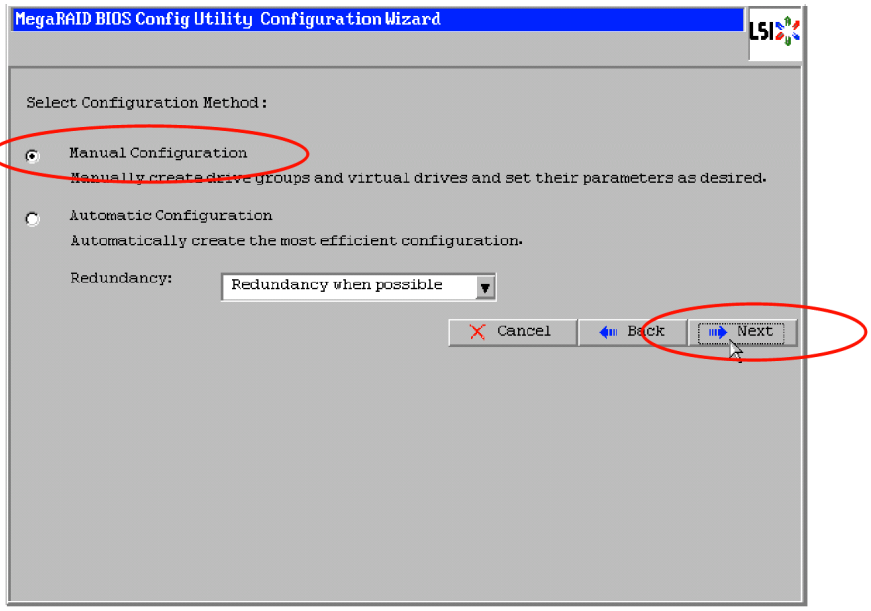

MegaRAID BIOS Config Utility Configuration Wizard
Configuration Wizard guides you through the steps for configuring the MegaRAID system easily and efficiently. The steps are as follows:
1. Drive Group definitions Group drives into Drive Groups.
2. Virtual Drive definitions Define virtual drives using those drive groups.
3. Configuration Preview Preview configuration before it is saved.
Please choose appropriate configuration type:
Clear Configuration Allows you to clear existing configuration only.
New Configuration Clears the existing configuration. If you have any existing data in the earlier defined drives, the data will be lost.
Add Configuration Retains the old configuration and then adds new drives to the configuration. This is the safest operation as it does not result in any data loss.
Cancel
Next

Clear Configuration :	Allows you to clear existing configuration (RAID information).
New Configuration :	Clears the existing configuration and creates a new VD.
Add Configuration :	Retains the old VD and then adds new virtual drive.

IMPORTANT: If you create a VD by New Configuration, any existing data in the earlier defined drives will be lost.

When you select [Add Configuration], the screen as shown below appears.

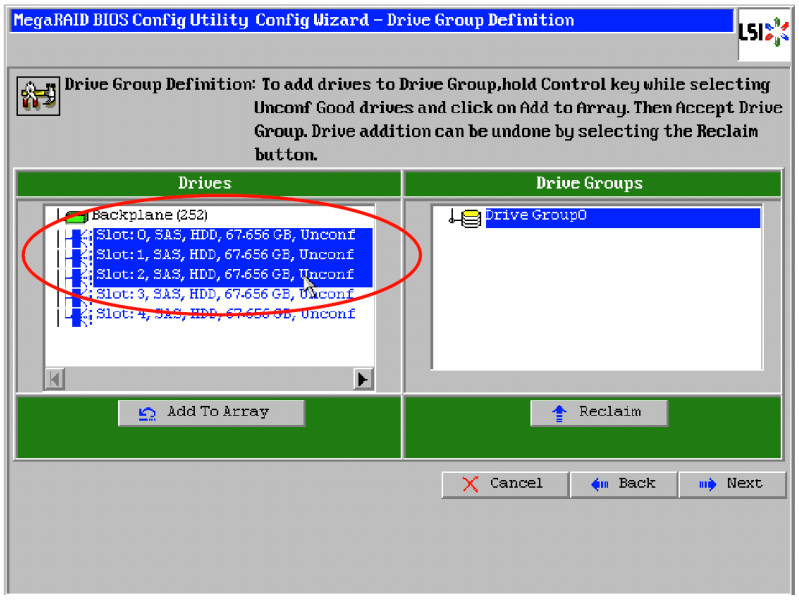
Be sure to select [Manual Configuration], and click [Next].



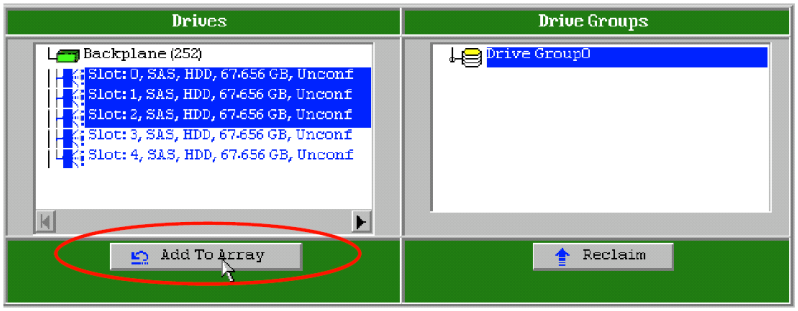
IMPORTANT: The RAID Controller does not support "Automatic Configuration" feature.

Use this menu to define several Hard Disk Drives as a drive group (DG).

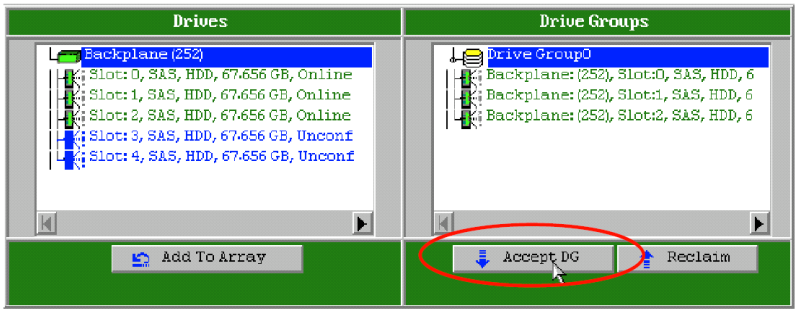
1. While pressing **Ctrl**, click the Hard Disk Drives to be included in DG.


MegaRAID BIOS Config Utility Config Wizard – Drive Group Definition
Drive Group Definition: To add drives to Drive Group,hold Control key while selecting Unconf Good drives and click on Add to Array. Then Accept Drive Group. Drive addition can be undone by selecting the Reclaim button.
Drives
Drive Groups
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB, Unconf
Slot: 1, SAS, HDD, 67.656 GB, Unconf
Slot: 2, SAS, HDD, 67.656 GB, Unconf
Slot: 3, SAS, HDD, 67.656 GB, Unconf
Slot: 4, SAS, HDD, 67.656 GB, Unconf
Drive Group0
Add To Array
Reclaim
Cancel
Back
Next

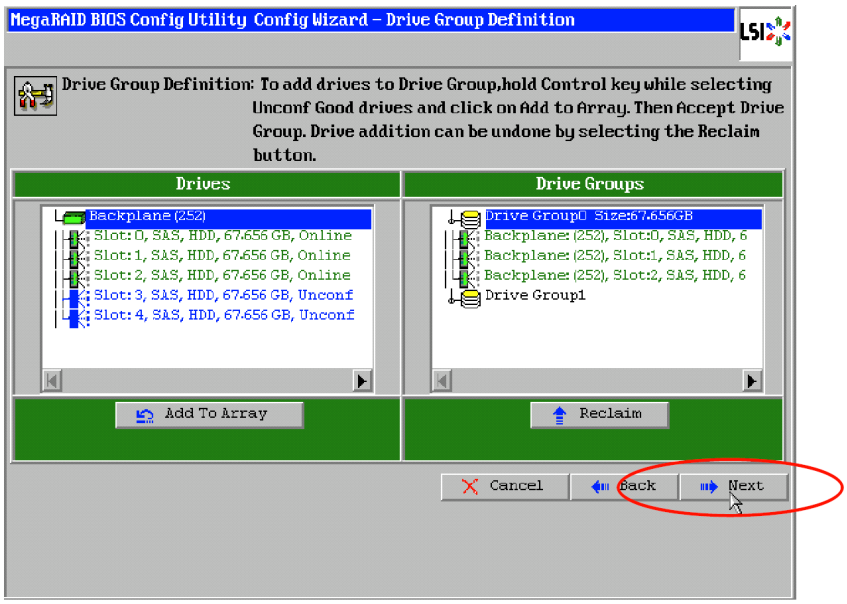
2. Upon completion of selection, click [Add to Array] at the lower left of the screen.


Drives
Drive Groups
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB, Unconf
Slot: 1, SAS, HDD, 67.656 GB, Unconf
Slot: 2, SAS, HDD, 67.656 GB, Unconf
Slot: 3, SAS, HDD, 67.656 GB, Unconf
Slot: 4, SAS, HDD, 67.656 GB, Unconf
Drive Group0
Add To Array
Reclaim

3. A new DG is defined in the Drive Groups frame. To define the new DG, click [Accept DG] at the lower right of the screen.

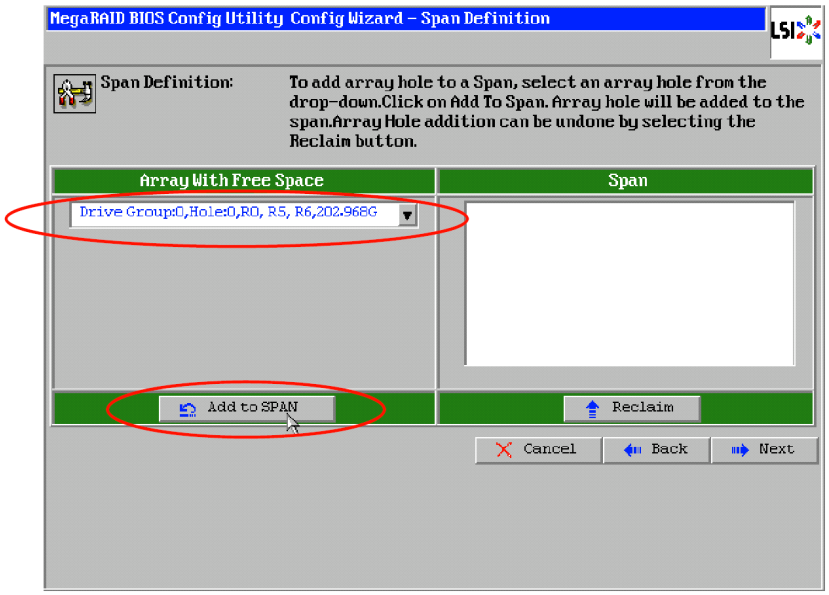

Drives
Drive Groups
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB, Online
Slot: 1, SAS, HDD, 67.656 GB, Online
Slot: 2, SAS, HDD, 67.656 GB, Online
Slot: 3, SAS, HDD, 67.656 GB, Unconf
Slot: 4, SAS, HDD, 67.656 GB, Unconf
Drive Group0
Backplane: (252), Slot:0, SAS, HDD, 6
Backplane: (252), Slot:1, SAS, HDD, 6
Backplane: (252), Slot:2, SAS, HDD, 6
Add To Array
Accept DG
Reclaim

4. After the DG has been defined, click [Next] at the lower right of the screen.

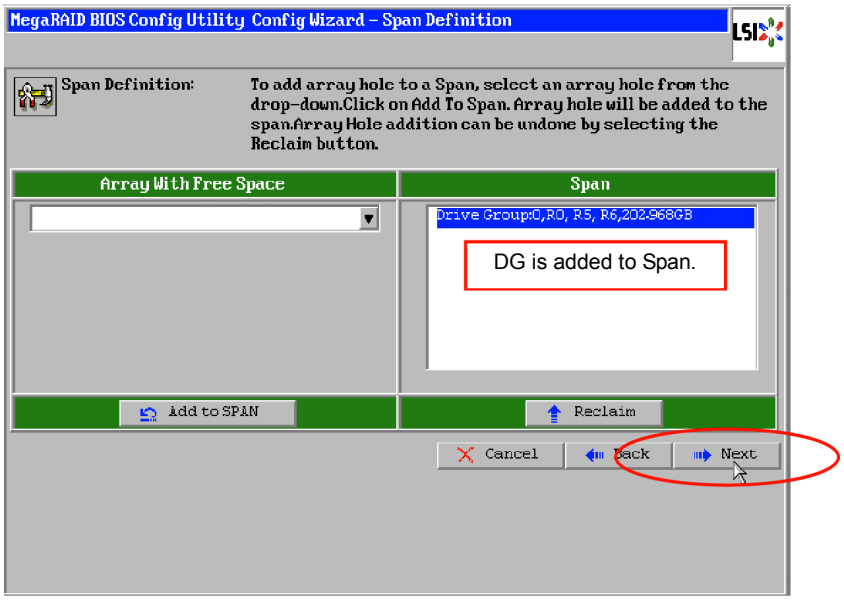

MegaRAID BIOS Config Utility Config Wizard – Drive Group Definition
LSI
Drive Group Definition: To add drives to Drive Group,hold Control key while selecting Unconf Good drives and click on Add to Array. Then Accept Drive Group. Drive addition can be undone by selecting the Reclaim button.
Drives
Drive Groups
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB, Online
Slot: 1, SAS, HDD, 67.656 GB, Online
Slot: 2, SAS, HDD, 67.656 GB, Online
Slot: 3, SAS, HDD, 67.656 GB, Unconf
Slot: 4, SAS, HDD, 67.656 GB, Unconf
Drive Group0 Size:67.656GB
Backplane: (252), Slot:0, SAS, HDD, 6
Backplane: (252), Slot:1, SAS, HDD, 6
Backplane: (252), Slot:2, SAS, HDD, 6
Drive Group1
Add To Array
Reclaim
Cancel
Back
Next

5. Then, the Span Definition screen appears.

6. Select a DG to define VD from "Array With Free Space" frame, then click [Add to SPAN]. The DG is defined in the "Span" field to the right.


MegaRAID BIOS Config Utility Config Wizard – Span Definition
Span Definition:
To add array hole to a Span, select an array hole from the drop-down.Click on Add To Span. Array hole will be added to the span.Array Hole addition can be undone by selecting the Reclaim button.
Array With Free Space
Span
Drive Group:0,Hole:0,R0, R5, R6,202.968G
Add to SPAN
Reclaim
Cancel
Back
Next

7. After the Span has been defined, click [Next] at the lower right of the screen.


MegaRAID BIOS Config Utility Config Wizard – Span Definition
Span Definition:
To add array hole to a Span, select an array hole from the drop-down.Click on Add To Span. Array hole will be added to the span.Array Hole addition can be undone by selecting the Reclaim button.
Array With Free Space
Span
Drive Group:0,R0, R5, R6,202.968GB
DG is added to Span.
Add to SPAN
Reclaim
Cancel
Back
Next

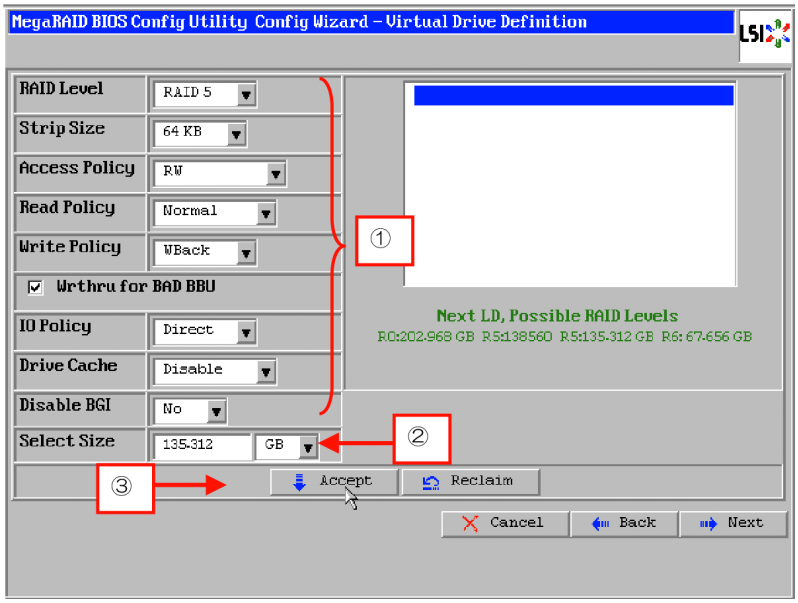
IMPORTANT:

- To configure RAID0, 1, 5, or 6, perform Span Definition to a single DG only. If you need to perform Span Definition to several DGs, define VD for the first DG, then select the next DG to define VD.
- To configure RAID10 or 50, select several DGs containing the same number of Hard Disk Drives for Span Definition.
- Span Definition cannot be performed to DGs containing the different number of Hard Disk Drives.

Define the virtual drive (VD) in DG that has been created in previous step. When DG was defined, [VD Definition] screen is displayed. In the "Next LD, Possible RAID Levels" column, available RAID levels and maximum size for VD are displayed.

As an example, define a RAID5 VD of 135.312GB.

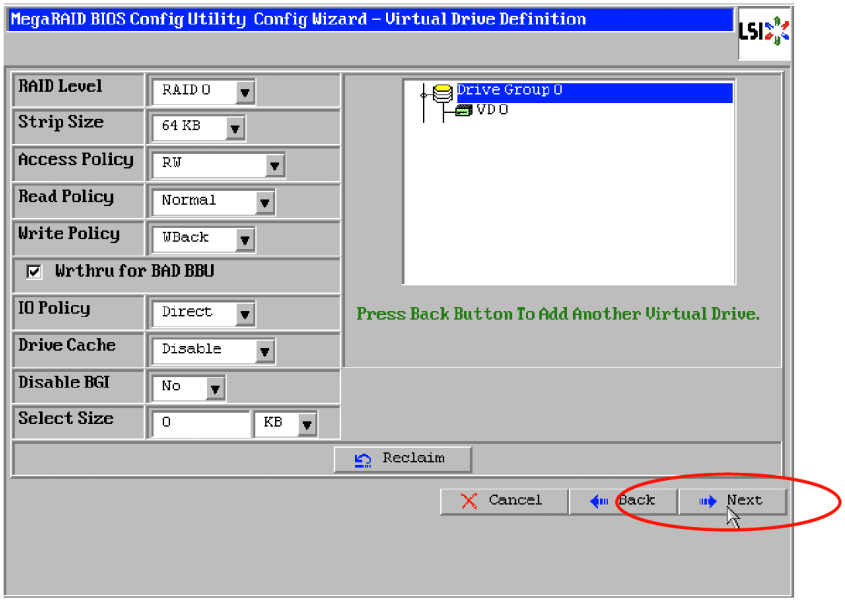
1. Specify the necessary parameters in left columns.
2. Enter "135.132" in "Select Size" field, and select "GB" as a unit.
3. Click [Accept] at the lower center of the screen.
4. If you want to define another VD, click [Back] and repeat steps starting from Span Definition screen.



IMPORTANT:

- The value shown in "Select Size" indicates the maximum size allowed for RAID1 (two Hard Disk Drives) or RAID6 (three or more Hard Disk Drives). You need to specify the maximum size for any other RAID levels according to "Next LD, Possible RAID Levels".
- To use RAID 5, RAID 6, or RAID50, you need to additionally install the optional N8103-119 RAID Upgrade Kit.
- If N8103-119 RAID Upgrade Kit is not installed, do not select "RAID5" that may appear in [RAID Level] box. If selected, you will fail to save the configuration information. In such a case, you need to define a VD again from the beginning.

5. Upon completion of VD definition, click [Next].

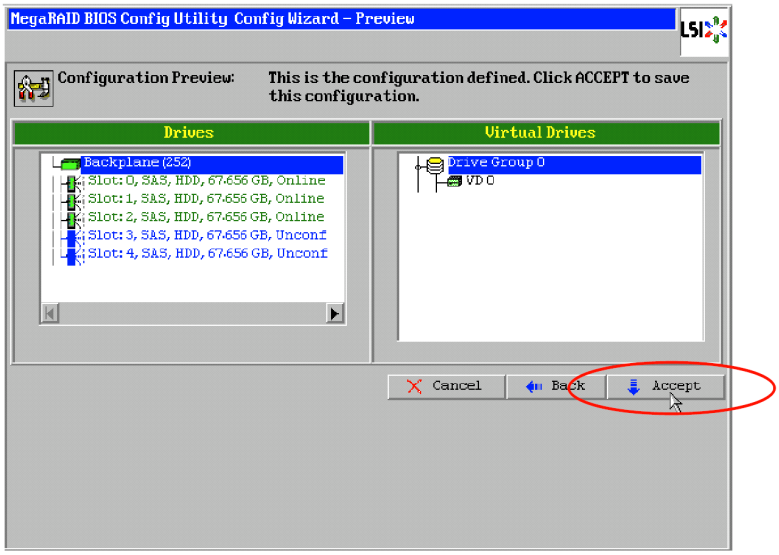


IMPORTANT:

- RAID1 may be configured with three or more Hard Disk Drives in drive group. However, with this controller, the drive group must contain only two Hard Disk Drives.
- WebBIOS does not support the RAID6 logical drive having Stripe Size: 8KB composed of three Hard Disk Drives.

6. VD is created in DG as shown in the screen below.

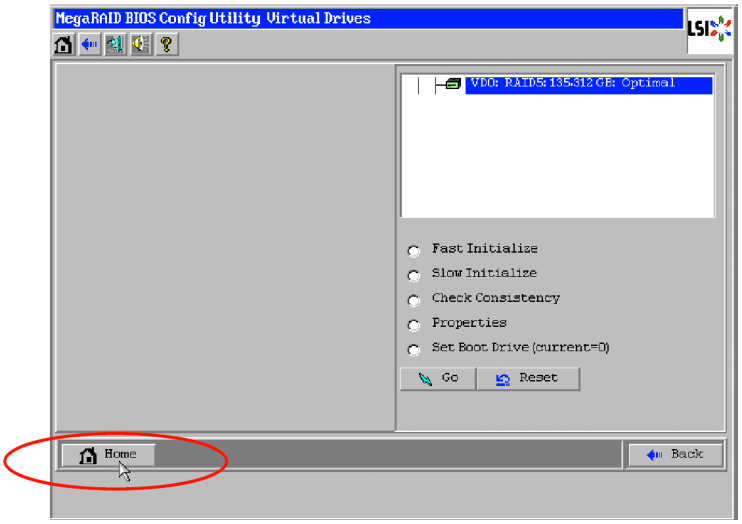
   After making sure that the VD is created correctly, click [Accept] at the lower right of the screen.


MegaRAID BIOS Config Utility Config Wizard – Preview
Configuration Preview:
This is the configuration defined. Click ACCEPT to save this configuration.
Drives
Virtual Drives
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB, Online
Slot: 1, SAS, HDD, 67.656 GB, Online
Slot: 2, SAS, HDD, 67.656 GB, Online
Slot: 3, SAS, HDD, 67.656 GB, Unconf
Slot: 4, SAS, HDD, 67.656 GB, Unconf
Drive Group 0
VD 0
Cancel
Back
Accept

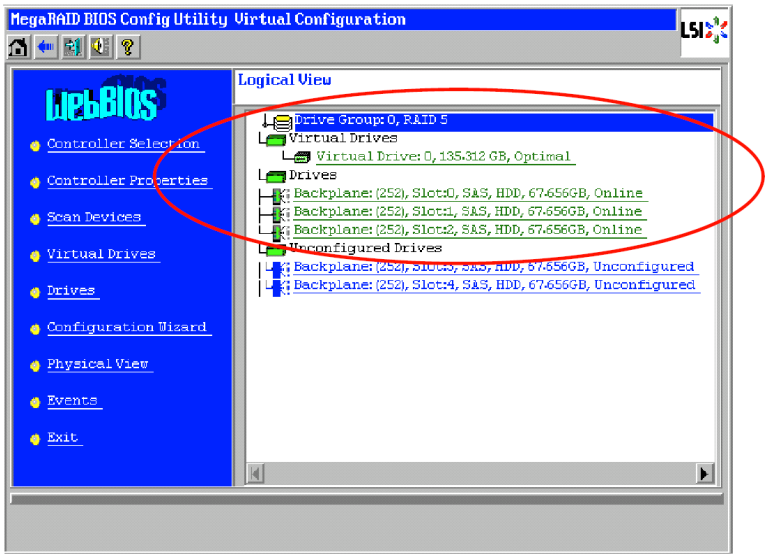
7. The confirmation message "Save this Configuration?" appears. Click "Yes" to save the configuration.

8. The confirmation message "Want to Initialize the New Virtual Drives?" appears. To perform "Fast Initialize", select "Yes".

9. "Virtual Drives" operation screen is displayed. If no other operation is required, click [Home] at the lower left of the screen.



10. WebBIOS Top Menu is displayed. Virtual Drives you have created is displayed in the right frame of the screen.

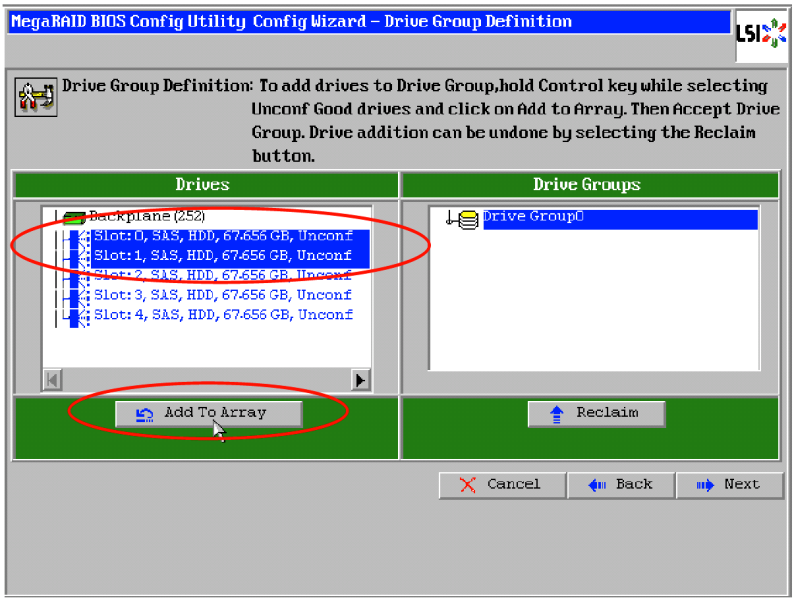


Configure SPAN

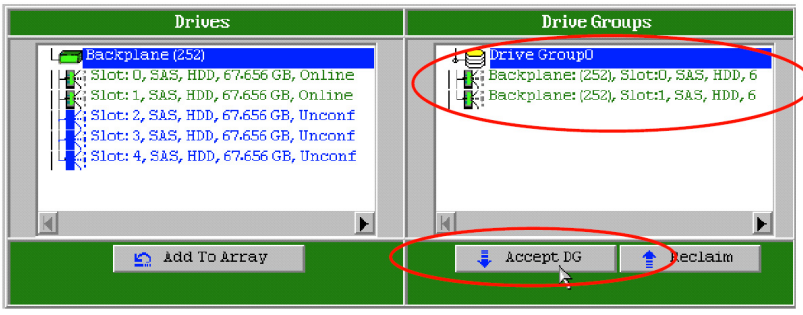
The following explains the sample procedure to configure RAID10 (spanning of RAID1) with four Hard Disk Drives.

> **IMPORTANT:** Do not attempt to configure RAID00 or RAID60. They are not supported.

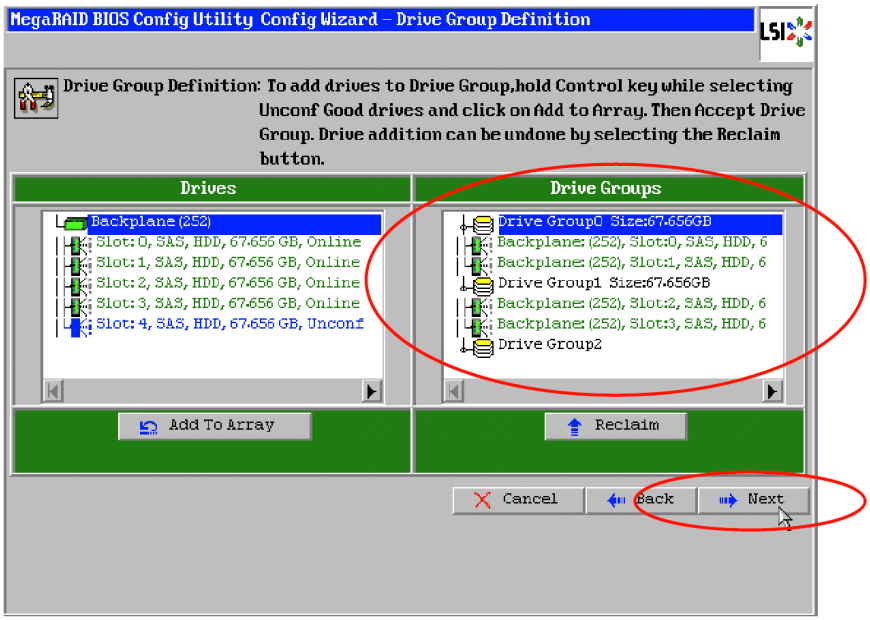
1. Click [Configuration Wizard] on WebBIOS Top Menu to start Wizard.
2. While pressing **Ctrl**, click the Hard Disk Drives to be included in DG. (In the example, two DGs will be configured and spanned.)


MegaRAID BIOS Config Utility Config Wizard – Drive Group Definition
Drive Group Definition: To add drives to Drive Group,hold Control key while selecting Unconf Good drives and click on Add to Array. Then Accept Drive Group. Drive addition can be undone by selecting the Reclaim button.
Drives
Drive Groups
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB, Unconf
Slot: 1, SAS, HDD, 67.656 GB, Unconf
Slot: 2, SAS, HDD, 67.656 GB, Unconf
Slot: 3, SAS, HDD, 67.656 GB, Unconf
Slot: 4, SAS, HDD, 67.656 GB, Unconf
Drive Group0
Add To Array
Reclaim
Cancel
Back
Next

3. Upon completion of selection, click [Add to Array] at the lower left of the screen. After making sure that the new DG has been defined in Drive Groups frame to the right, click [Accept DG].

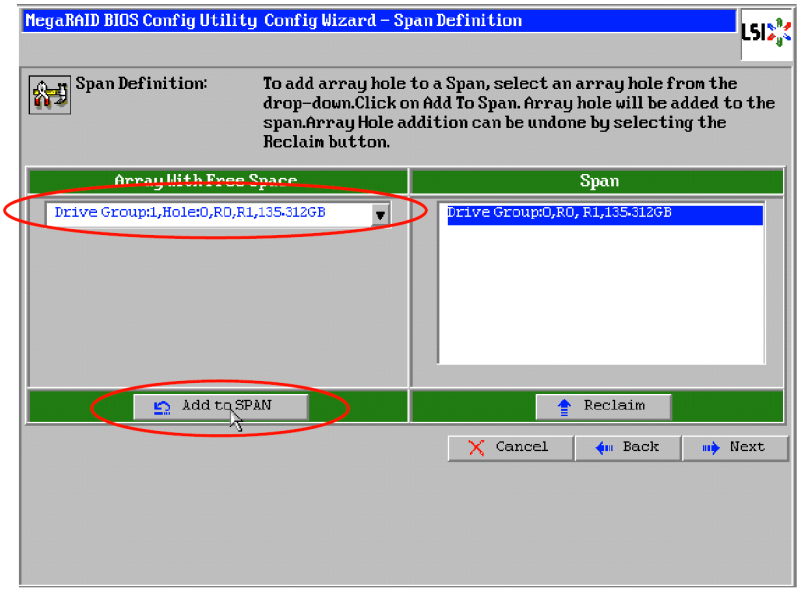

Drives
Drive Groups
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB, Online
Slot: 1, SAS, HDD, 67.656 GB, Online
Slot: 2, SAS, HDD, 67.656 GB, Unconf
Slot: 3, SAS, HDD, 67.656 GB, Unconf
Slot: 4, SAS, HDD, 67.656 GB, Unconf
Drive Group0
Backplane: (252), Slot:0, SAS, HDD, 6
Backplane: (252), Slot:1, SAS, HDD, 6
Add To Array
Accept DG
Reclaim

4. A new DG is defined in the Drive Groups frame. Define another DG in the similar procedures. After DGs have been defined, click [Next] at the lower right of the screen.

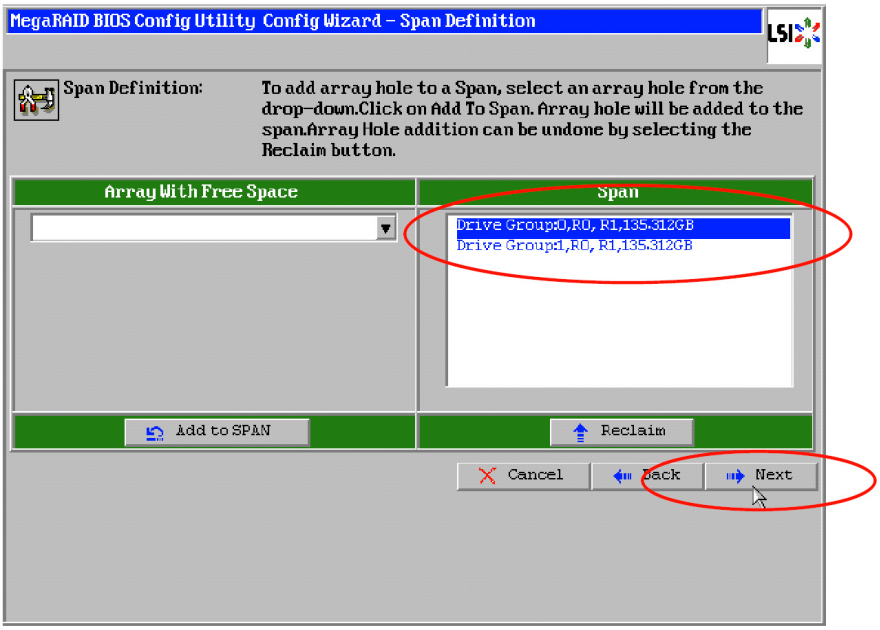

MegaRAID BIOS Config Utility Config Wizard – Drive Group Definition
Drive Group Definition: To add drives to Drive Group,hold Control key while selecting Unconf Good drives and click on Add to Array. Then Accept Drive Group. Drive addition can be undone by selecting the Reclaim button.
Drives
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB, Online
Slot: 1, SAS, HDD, 67.656 GB, Online
Slot: 2, SAS, HDD, 67.656 GB, Online
Slot: 3, SAS, HDD, 67.656 GB, Online
Slot: 4, SAS, HDD, 67.656 GB, Unconf
Drive Groups
Drive Group0 Size:67.656GB
Backplane: (252), Slot:0, SAS, HDD, 6
Backplane: (252), Slot:1, SAS, HDD, 6
Drive Group1 Size:67.656GB
Backplane: (252), Slot:2, SAS, HDD, 6
Backplane: (252), Slot:3, SAS, HDD, 6
Drive Group2
Add To Array
Reclaim
Cancel
Back
Next

5. When DGs were defined, [Span Definition] screen is displayed.

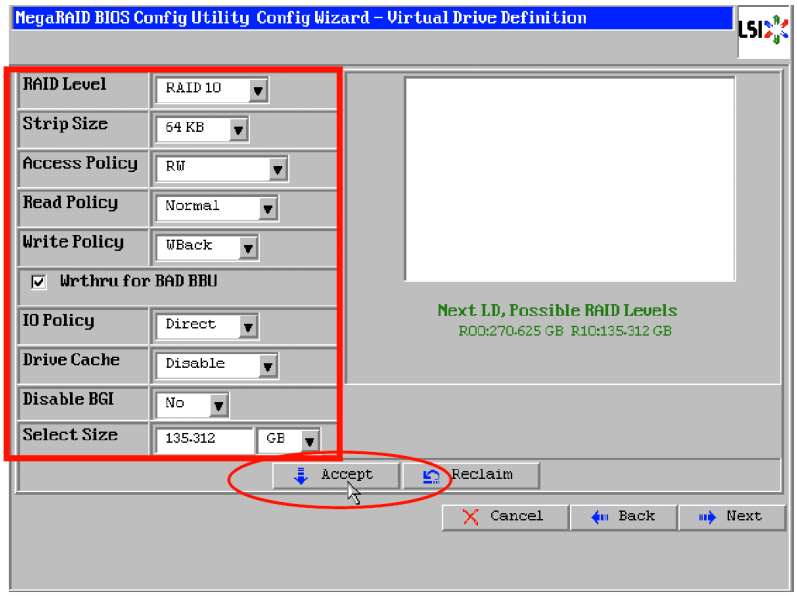
6. Select DG0 from "Array With Free Space" frame, then click [Add to SPAN]. The DG is defined in the "Span" field to the right.


MegaRAID BIOS Config Utility Config Wizard – Span Definition
Span Definition:
To add array hole to a Span, select an array hole from the drop-down.Click on Add To Span. Array hole will be added to the span.Array Hole addition can be undone by selecting the Reclaim button.
Array With Free Space
Span
Drive Group:1,Hole:0,R0,R1,135.312GB
Drive Group:0,R0, R1,135.312GB
Add to SPAN
Reclaim
Cancel
Back
Next

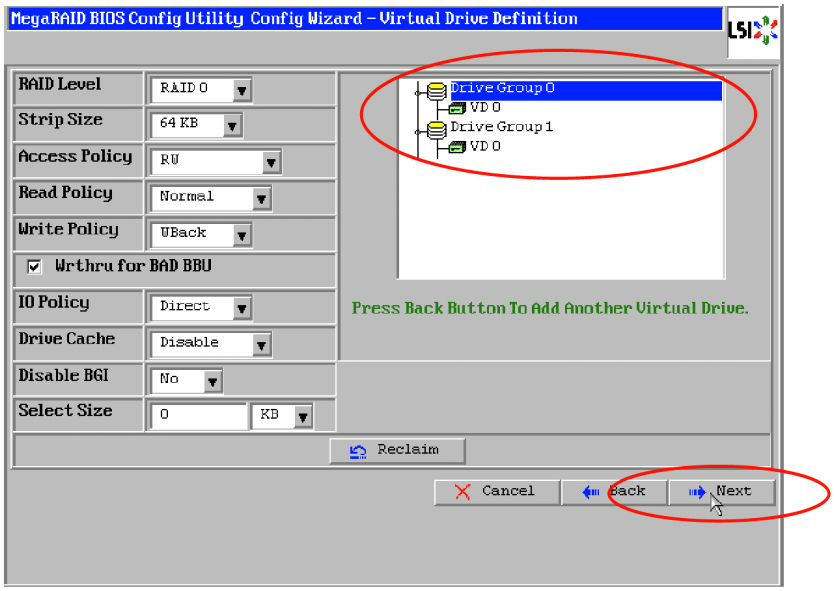
7. Then, select DG1 and click [Add to SPAN]. When the two DGs are defined in the "Span" field to the right, click [Next] at the lower right of the screen.


MegaRAID BIOS Config Utility Config Wizard – Span Definition
Span Definition:
To add array hole to a Span, select an array hole from the drop-down.Click on Add To Span. Array hole will be added to the span.Array Hole addition can be undone by selecting the Reclaim button.
Array With Free Space
Span
Drive Group:0,R0, R1,135.312GB
Drive Group:1,R0, R1,135.312GB
Add to SPAN
Reclaim
Cancel
Back
Next

8. The VD Definition screen is displayed. Enter the necessary parameters, and click [Accept].

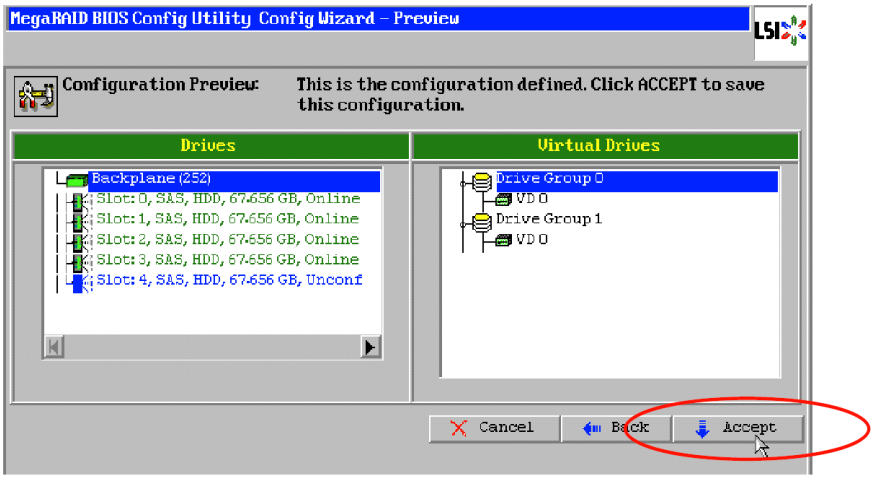


9. Make sure that both DG0 and DG1 are defined as VD 0, then click [Next] at the lower right of the screen.



IMPORTANT: RAID10 may be configured with three or more Hard Disk Drives in each span. However, with this controller, each drive group must contain only two Hard Disk Drives.

10. On the "Preview" screen, make sure the VD is defined correctly, then click [Accept] at the lower right of the screen.

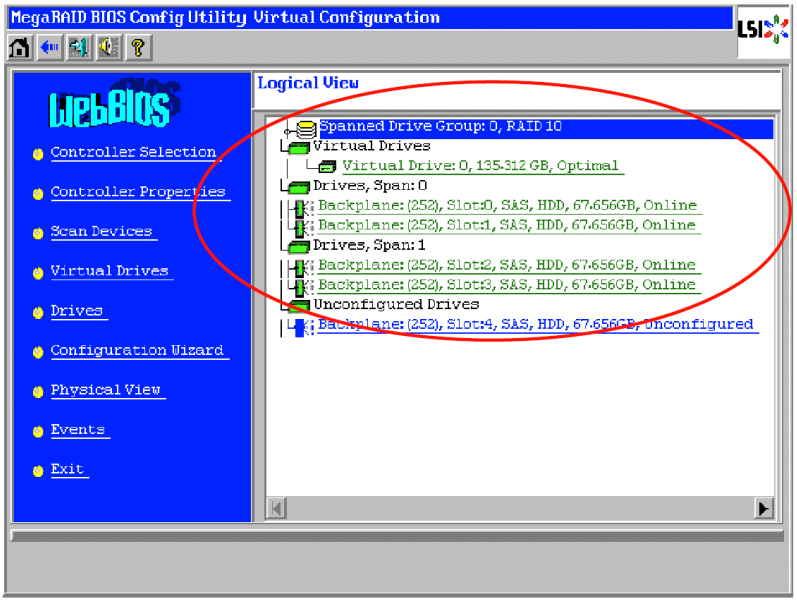

MegaRAID BIOS Config Utility Config Wizard – Preview
Configuration Preview:
This is the configuration defined. Click ACCEPT to save this configuration.
Drives
Virtual Drives
Backplane (252)
Slot: 0, SAS, HDD, 67.656 GB, Online
Slot: 1, SAS, HDD, 67.656 GB, Online
Slot: 2, SAS, HDD, 67.656 GB, Online
Slot: 3, SAS, HDD, 67.656 GB, Online
Slot: 4, SAS, HDD, 67.656 GB, Unconf
Drive Group 0
VD 0
Drive Group 1
VD 0
Cancel
Back
Accept

11. The confirmation message "Save this Configuration?" appears. Click "Yes" to save the configuration.

12. The confirmation message "All data on the new Virtual Drives will be lost. Want to Initialize?" appears. Click "Yes" to perform "Fast Initialize".

13. "Virtual Drives" operation screen is displayed. If no other operation is required, click [Home] at the lower left of the screen.

14. The WebBIOS Top Menu is displayed. Virtual Drives you have created are displayed in the right frame of the screen.



Parameters for VD Definition

Listed below are parameters for Configuration Wizard.

Item	Parameter	Remarks
RAID Level	**RAID 0** / **RAID 1** / **RAID 5** / **RAID 6** / RAID 00 / **RAID 10** / **RAID 50** / RAID60	RAID 00 and RAID 60 are not supported.
Strip Size	8 KB / 16 KB / 32 KB / **64 KB** / 128 KB / 256 KB / 512 KB / 1024 KB	Recommended value: 64KB
Access Policy	**RW** / Read Only / Blocked	Recommended value: RW
Read Policy	**Normal** / Ahead / Adaptive	Recommended value: Normal
Write Policy	**WBack** / **Wthru**	WBack: WriteBack WThru: WriteThru
WrtThru forBAD BBU	Checked / Unchecked	Select a mode when WriteBack is specified for Write Policy. Checked: Normal WriteBack Unchecked: Constant WriteBack Recommended value: Checked
IO Policy	**Direct** / Cached	Recommended value: Direct
Disk CachePolicy	Unchanged / Enabled / **Disabled**	Recommended value: Disabled
Disable BGI	**No** / Yes	Specify whether to perform Background Initialize after creation of VD. Recommended value: No

IMPORTANT:

- BGI (Back Ground Initialize) is available only for the following VDs:
  – RAID5 VD configured with five or more physical devices.
  – RAID6 VD configured with seven or more physical devices.
- To use RAID 5, RAID 6, or RAID 50, you need to additionally install the optional N8103-119 RAID Upgrade Kit.
- If N8103-119 RAID Upgrade Kit is not installed, do not select "RAID5" that may appear in [RAID Level] box. If selected, you will fail to save the configuration information. In such a case, you need to define a VD again from the beginning.

The Write Policy has the following modes depending on combination with WrtThru for BAD BBU. Select a mode suitable for your environment.

		WrtThru forBAD BBU	
		Checked	**Unchecked**
Write Policy	WBack	Normal write back mode (recommended) The controller uses cache memory for writing. However, if the battery is being charged or failed, the controller operates in WThru (write through) mode automatically. Thus, this mode can provide higher data security.	Constant write back mode The controller always uses cache memory for writing regardless of battery charged status or existence of battery. Be sure to use UPS when specifying this mode for write policy.
	WThru	Write through mode The controller does not use cache memory for writing data. This mode can provide the highest data security, however, the writing performance is lower than that in write back mode.	* This mode is unavailable. If you do not check "WrtThru for BAD BBU" at creation of VD, this item is automatically checked after the VD has been created.

IMPORTANT:

- If constant write back mode is selected, the controller operates in write back mode even if the battery has failed or insufficiently charged. The data in cache memory may be lost at an occurrence of power failure.
- Be sure to use UPS when specifying the constant write back mode for write policy.

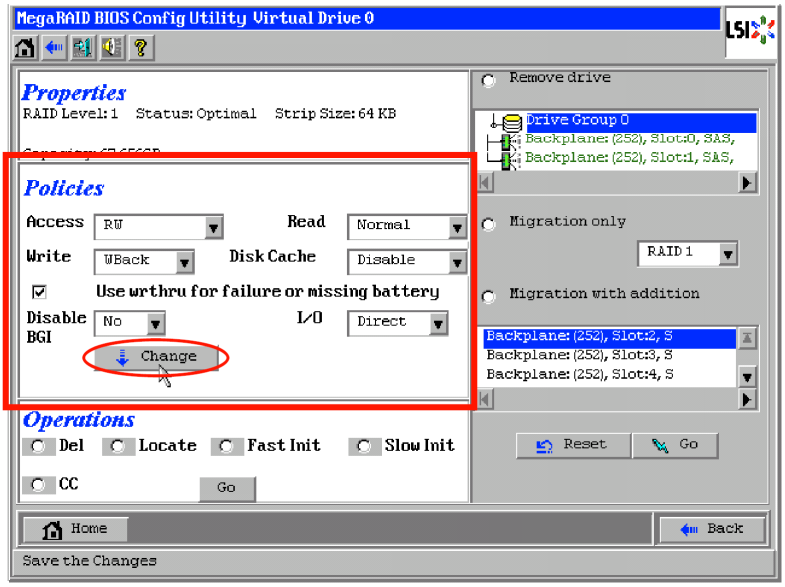
The Disk Cache Policy has the following modes. Select a mode suitable for your environment.

Unchanged	• The controller uses the default write cache policy of hard disk drive. • The default value may not be identical to the factory-set value, therefore, do not specify this mode.
Enabled	• The controller always uses the write cache policy of hard disk drive. • Be sure to use UPS when specifying this mode for disk cache policy.
Disabled	• The controller does not use the write cache policy of the hard disk drive. • This mode can provide the highest data security, however, the writing performance is lower than that in Enabled mode. • It is recommended to use this mode for the sake of data security.

IMPORTANT:

- If "Unchanged" is specified for Disk Cache Policy, the default value may not be identical to the factory-set value, therefore, do not specify this mode.
- If Enabled is specified for Disk Cache Policy, the controller uses the write cache policy of the hard disk drive. Accordingly, the data in cache memory of the hard disk drive may be lost at an occurrence of power failure.
- Be sure to use UPS when using the cache memory of the hard disk drive.

You can change parameters for VD definition except for RAID Level and Stripe Size. On the WebBIOS Top Menu, click [Virtual Drives] and specify parameters in "Policies" frame, then click [Change].

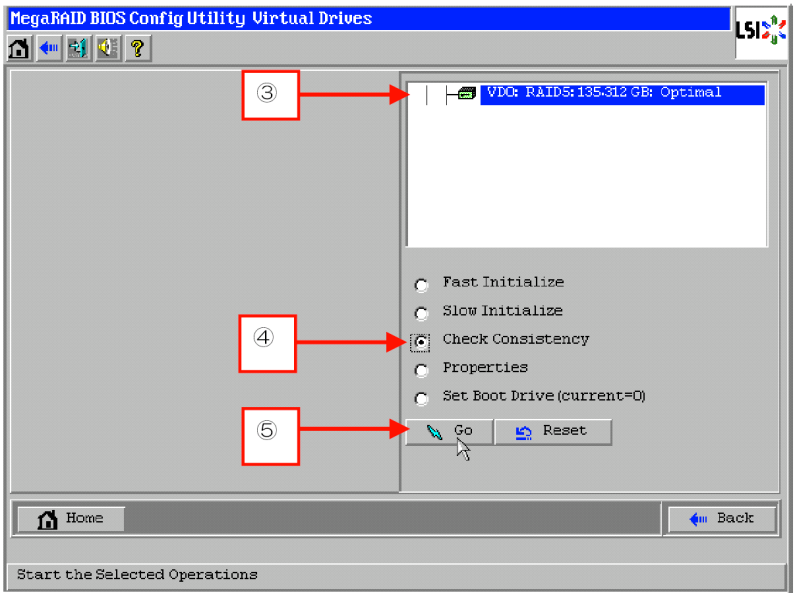


Operation of Various Features

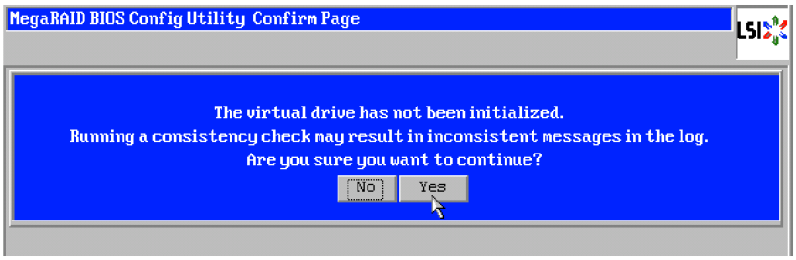
Check Consistency

Check Consistency is used to check consistency among virtual drives.

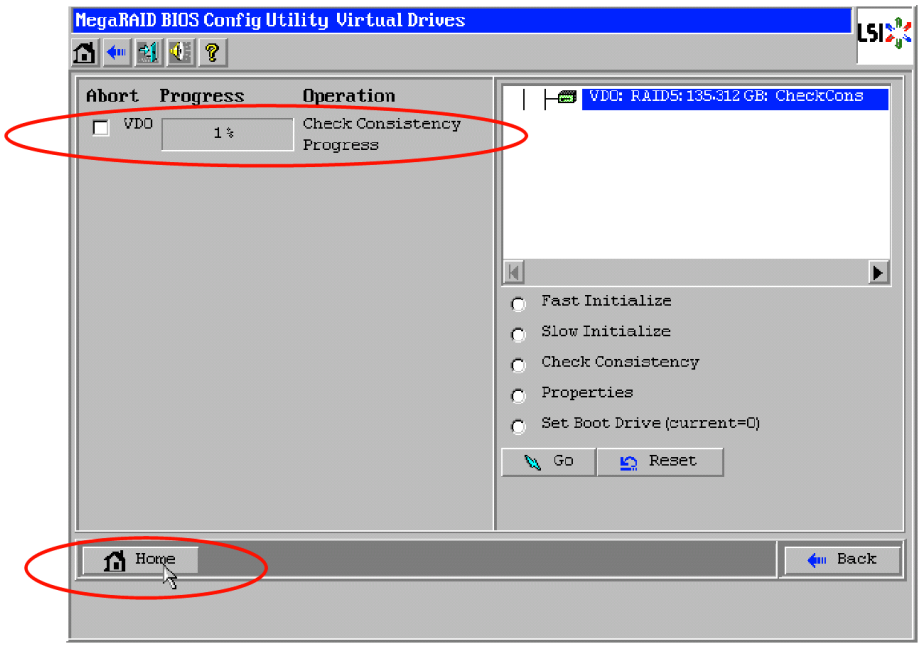
1. Start WebBIOS.
2. Click [Virtual Drives] on WebBIOS Top Menu.
3. Select a VD to perform Check Consistency from the upper right frame of Virtual Drives screen.
4. Click the checkmark column for Check Consistency from the lower right frame of Virtual Drives screen.
5. Make sure that Check Consistency is checked, and click [Go].



6. Inconsistency may be detected at Check Consistency performed immediately after the VD was configured. If the following alert is displayed, click [Yes] to perform Check Consistency. A lot of inconsistency may be detected, however, it is not a failure.


MegaRAID BIOS Config Utility Confirm Page
The virtual drive has not been initialized.
Running a consistency check may result in inconsistent messages in the log.
Are you sure you want to continue?
No
Yes

7. The progress of Check Consistency is displayed on the left frame of Virtual Drives screen.
8. Click [Home] at the lower left of Virtual Drives screen to return to the Top Menu.



IMPORTANT: A lot of inconsistency may be detected at Check Consistency performed immediately after the VD was configured due to inconsistencies in the unused area. In such a case, an alert may be logged.

Manual Rebuild

Rebuild can be performed automatically when the failed Hard Disk Drive is replaced in hot-swap mode. However, if the failed Hard Disk Drive is replaced after turning off the power of the server, Rebuild will not start automatically. Use Manual Rebuild feature to recover the virtual drives as described below.

IMPORTANT:

- To perform rebuild by replacing the Hard Disk Drive in hot-swap mode, be sure to replace the device while the operating system or WebBIOS is running.
- You can view the progress of rebuild process on Universal RAID Utility screen or click [Virtual Drive] on WebBIOS Top Menu.
- With the progress indication being displayed, the rebuild may be processed at slow rate. Go to WebBIOS Top Menu after making sure the rebuild progress.
- Click [Home] while the background task such as Consistency Check, Rebuild, or Reconstruction is being executed. With the progress indication being displayed, the background task may be processed at slow rate.

Described below are procedures based on assumption:
One of the Hard Disk Drives failed in a RAID5 VD configured with three Hard Disk Drives.

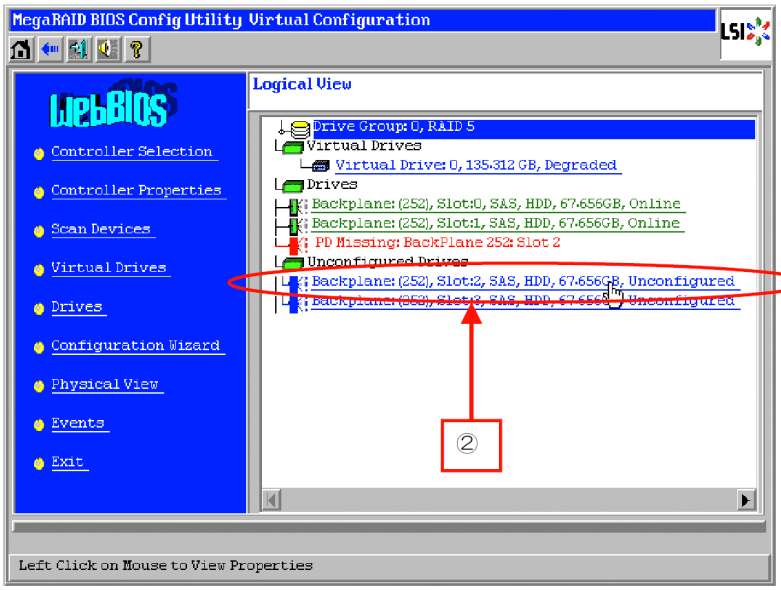
Replace the failed Hard Disk Drive with new one after turning off the power of the server. Auto Rebuild feature is disabled for non-hot-swap replacement. Use Manual Rebuild feature to recover the virtual drives as described below.

1. Start WebBIOS.

   Make sure that the status for the replaced Hard Disk Drive is indicated as "Unconfigured Good" in the right frame of the Top Menu.

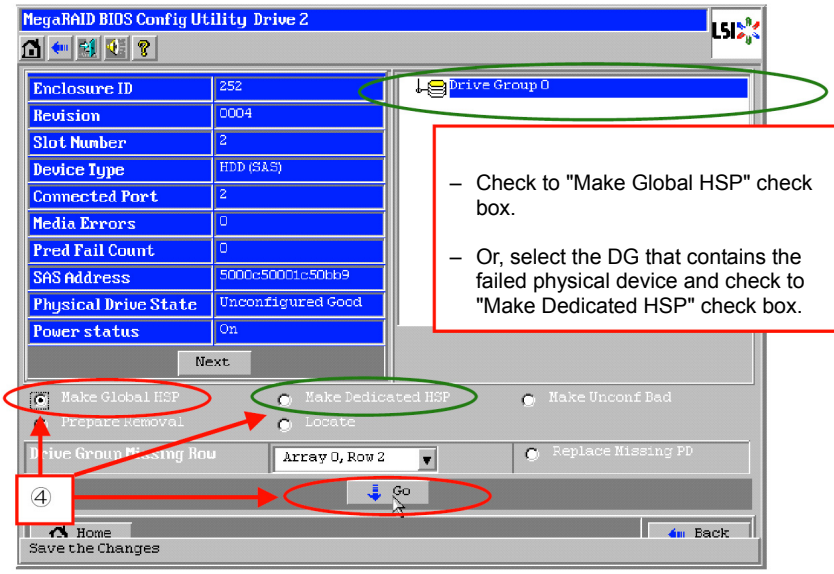
   In the example below, the Hard Disk Drive in slot number 2 has been replaced.
   The indication "PD Missing: BackPlane 252: Slot2" represents that the Hard Disk Drive in VD having been installed in slot number 2 was removed.

2. Select the newly connected Hard Disk Drive (the Hard Disk Drive in slot number 2 in the example) from the right frame of Top Menu.

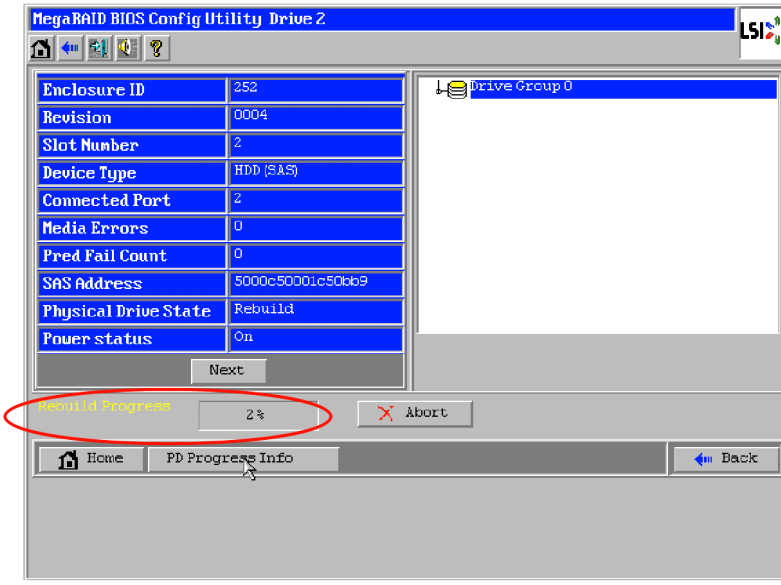


3. The properties for Physical Drive is displayed.

4. Check to "Make Global HSP" or select the DG you want to rebuild and check to "Make Dedicated HSP", and then click [Go] on the lower center of the screen.

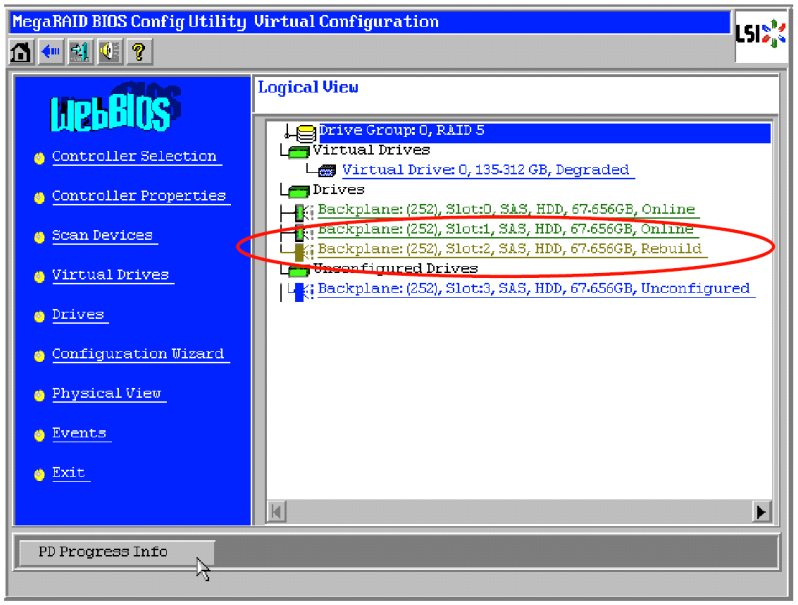


5. When [Rebuild Progress] is displayed, click [Home] at the lower left of the screen to go back to WebBIOS Top Menu.

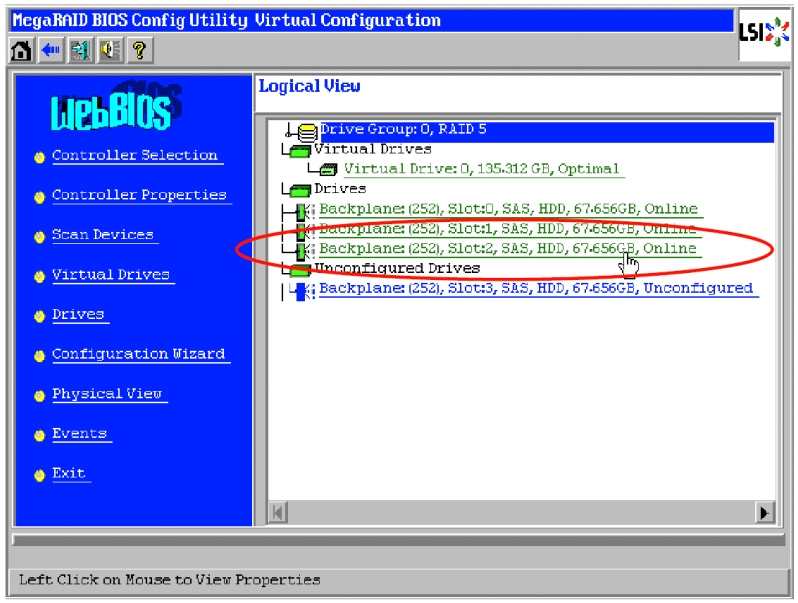


IMPORTANT: Click [Home] while the background task such as Consistency Check, Rebuild, or Reconstruction is being executed. With the progress indication being displayed, the background task may be processed at slow rate.

6. The WebBIOS Top Menu changes as shown below during rebuild. If you click on Physical Drive being rebuilt, the progress of rebuild is displayed.



7. When the rebuild completes, the status for the Physical Drive is "Online" and that of the Virtual Drive is "Optimal".



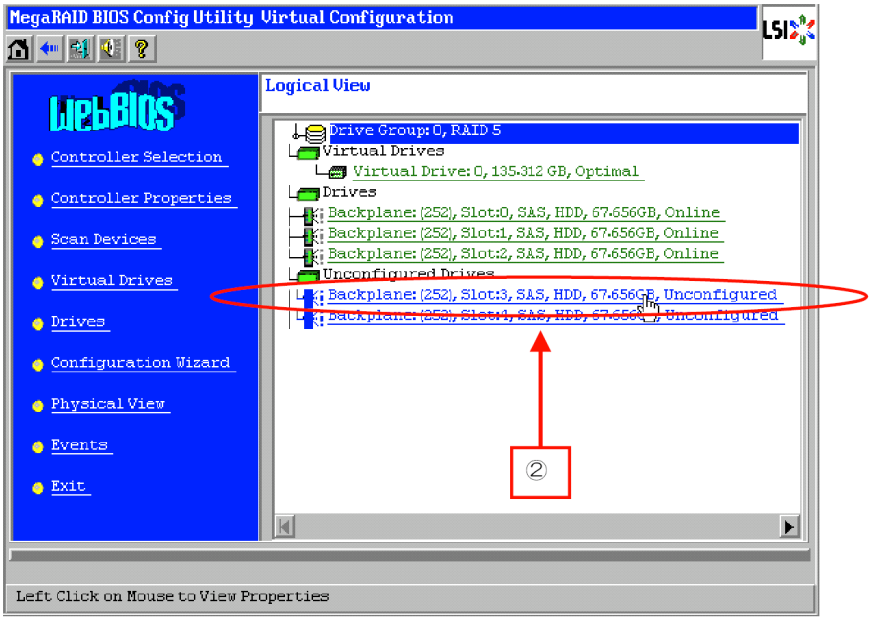
Setting Hot Spare

Described below are procedures based on assumption:
Add a Hard Disk Drive to a RAID5 VD configured with three Hard Disk Drives and assign a newly added Hard Disk Drive as Hot Spare Disk.

1. Start WebBIOS.

   Make sure that the status for the added Hard Disk Drive is indicated as "Unconfigured Good" in the right frame of the Top Menu.

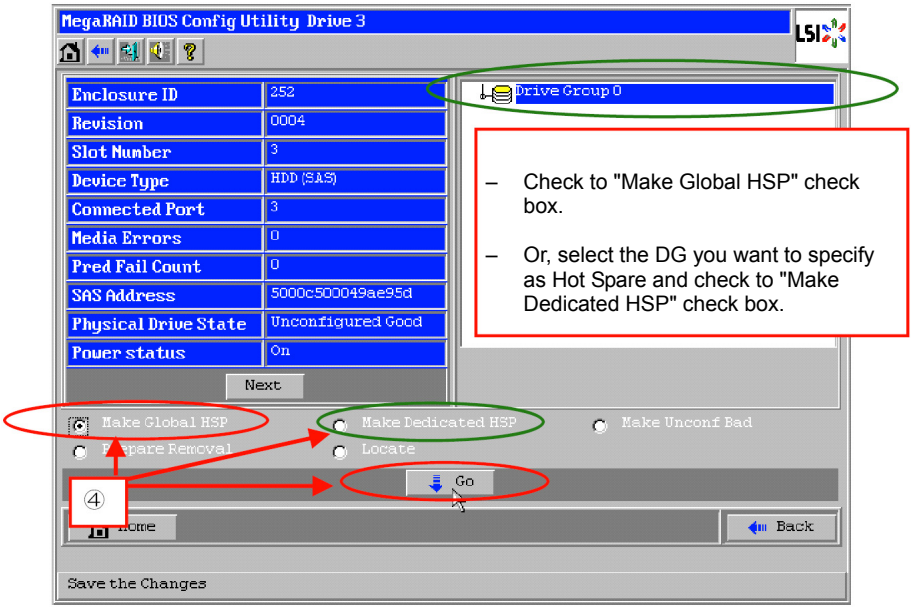
2. Select the newly connected Hard Disk Drive (the Hard Disk Drive in slot number 3 in the example) from the right frame of Top Menu.



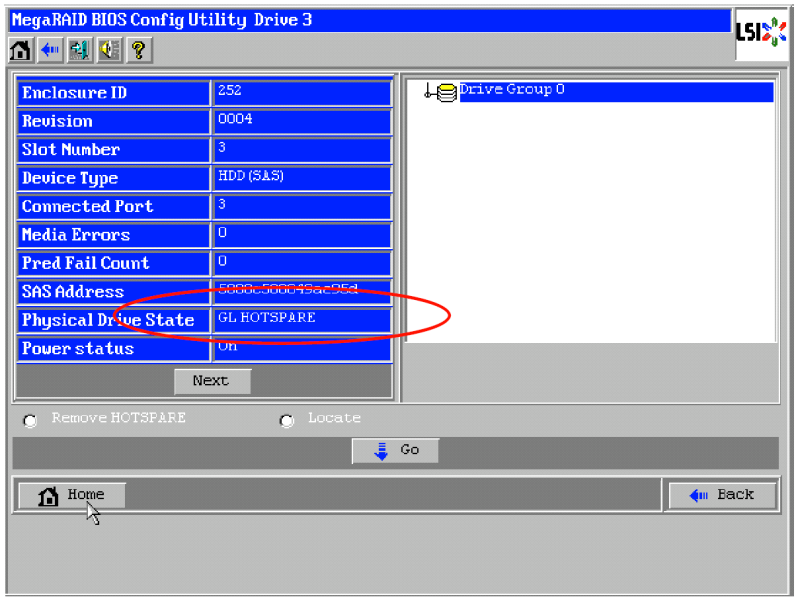
3. The properties for Physical Drive is displayed.

4. Check to "Make Global HSP" or select the DG you want to specify as Hot Spare and check to "Make Dedicated HSP", and then click [Go] on the lower center of the screen.

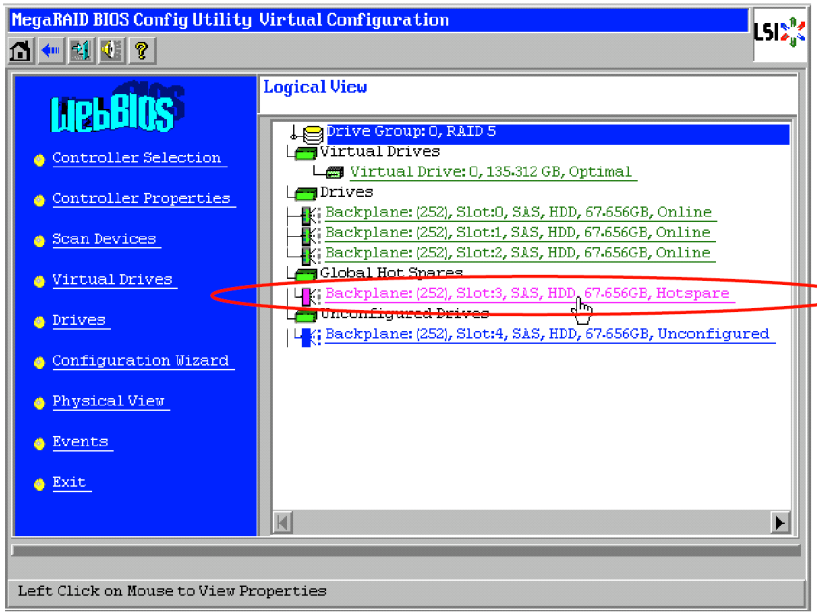
Global HSP:	Indicates the Hot Spare available for all DGs.
Dedicated HSP:	Indicates the Hot Spare available only for the specific DG. You need to specify the target DG.



5. The status for the newly connected Hard Disk Drive changes to "GL HOTSPARE" or "DED HOTSPARE".



6. Click [Home] at the lower left of the screen to go back to WebBIOS Top Menu.



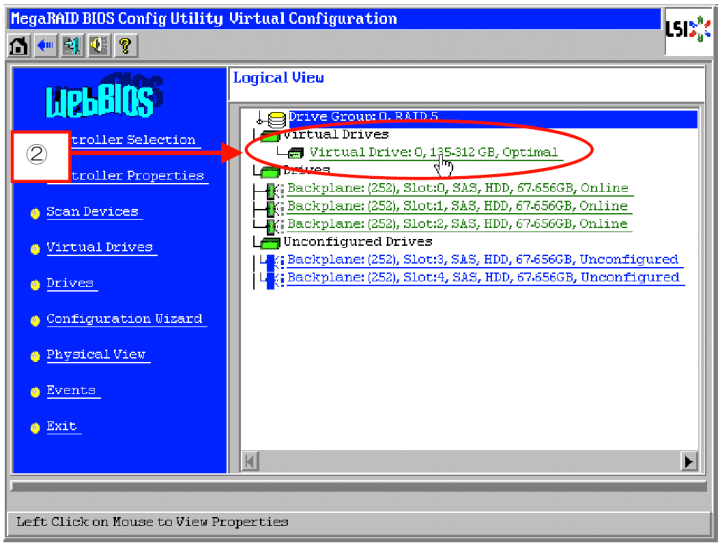
Reconstruction

Described below are procedures based on assumption:
Add a Hard Disk Drive to a RAID5 VD configured with three Hard Disk Drives to make a RAID5 VD configured with four Hard Disk Drives.

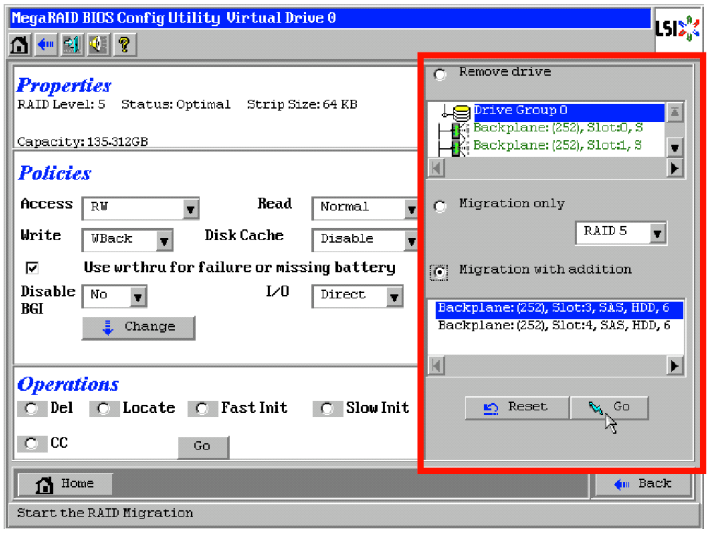
1. Start WebBIOS.

   Make sure that the status for the added Hard Disk Drive is indicated as "Unconfigured Good" in the right frame of the Top Menu.

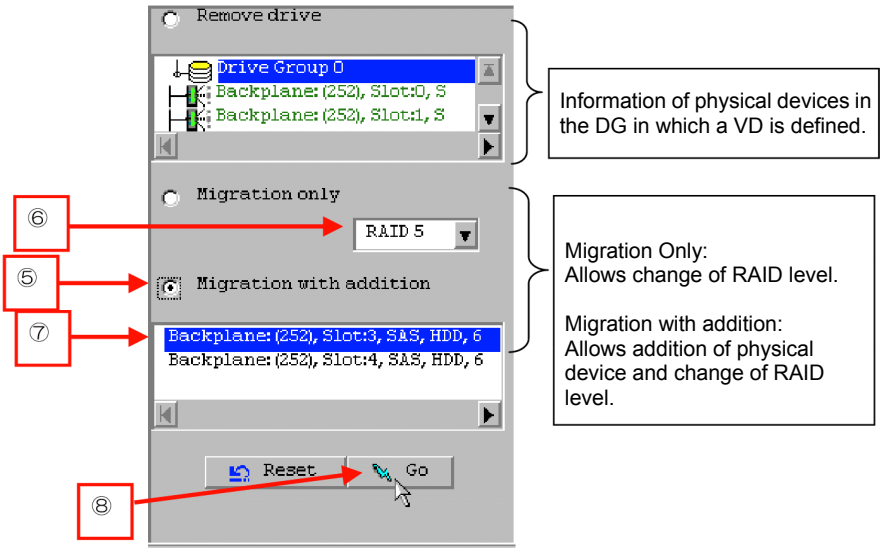
2. Select a VD you want to reconstruct (VD 0 in the example) from the right frame of Top Menu.



3. Setting menu for VD is displayed.



4. On the right of the screen, items required for reconstruction are displayed.



5. Select "Migration with addition".
6. Specify the RAID level used after reconstruction.
7. Select a Hard Disk Drive to be added.
8. When you finished Steps 5 to 7, click [Go] at the lower right of the screen.
9. The progress of reconstruction is displayed on the lower left of the screen. Click [Home] at the lower left of the screen to return to the WebBIOS Top Menu.

IMPORTANT:

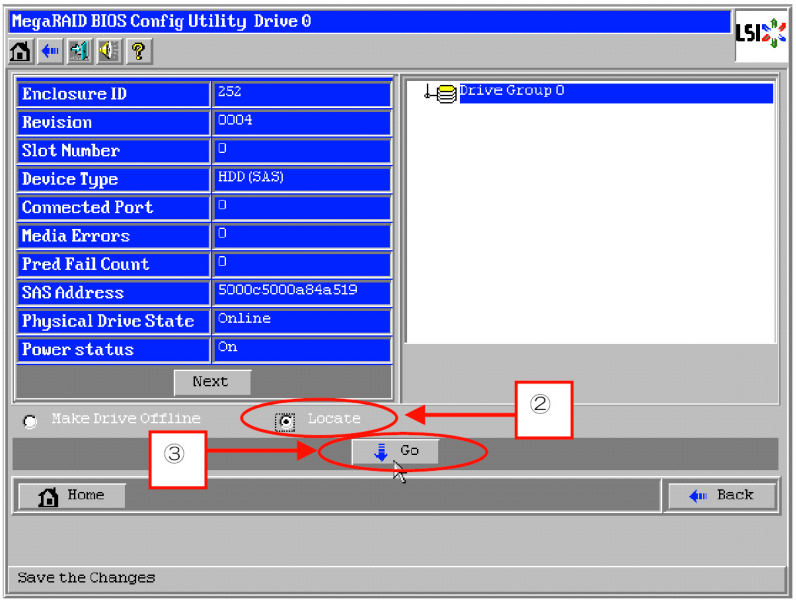
- The capacity of virtual drive may be incorrectly displayed after reconstruction. In this case, perform Scan Devices from the Top Menu.
- Click [Home] while the background task such as Consistency Check, Rebuild, or Reconstruction is being executed. With the progress indication being displayed, the background task may be processed at slow rate.

Locate

The Locate command makes an LED on Hard Disk Drive light or blink to confirm the location of the slot. We recommend you to check the slot of Hard Disk Drive before adding VD or hot spare disks, reconstructing VD, or replacing Hard Disk Drive.

How to execute Locate command on WebBIOS

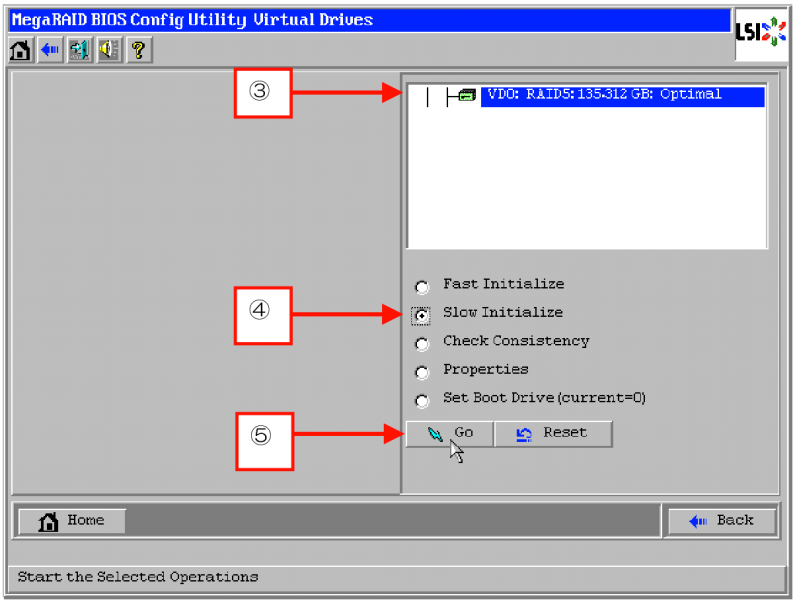
1. Click a Physical Drive to check the location on the WebBIOS Top Menu.
2. The Physical Drive properties are displayed. Click [Locate].
3. Click [Go]. The LED of the Hard Disk Drive lights or blinks.



Slow Initialize

Slow Initialize writes zero to all the sectors of the data area in the VD.

1. Start WebBIOS.
2. Click [Virtual Drives] on the WebBIOS Top Menu.
3. Select a VD to perform Slow Initialize from the upper right frame of the Virtual Drives screen.
4. Click the checkmark column for Slow Initialize from the lower right frame of the Virtual Drives screen.
5. Make sure that Slow Initialize is checked, and click [Go].



IMPORTANT:

- To create a VD using the Configuration Wizard of WebBIOS, execute Fast Initialize to clear the first sector that contains partition information.
- Slow Initialize takes a long time to complete.

WebBIOS and Universal RAID Utility

You can use Universal RAID Utility for configuration and management, monitoring of RAID System after start up operating system.

The point to be kept in mind when using Universal RAID Utility together with WebBIOS is as follows.

Terms

Terms used in WebBIOS differs from those used in Universal RAID Utility.

When you use Universal RAID Utility together with WebBIOS, substitute terms according to the following list.

Term of WebBIOS	Term of Universal RAID Utility
Adapter	RAID Controller
Virtual Drive	Logical Drive
Drive Group	Disk Array
Physical Drive	Physical Device

Number and ID

The number to manage each component of RAID System used in Universal RAID Utility differs from that used in WebBIOS.

Adapter and RAID Controller

WebBIOS manages Adapter by a number beginning with 0. You can see a number of Adapter where [Adapter No] in [Adapter Selection] menu.

Universal RAID Utility manages RAID Controller by a number beginning with 1. You can see a number of RAID Controller where [Number] in the property of RAID Controller on RAID Viewer or [RAID Controller #X] in the property of RAID Controller on raidcmd.

In addition, you can see the number of Adapter managed by WebBIOS where [ID] in the property of RAID Controller by Universal RAID Utility.

Virtual Drive and Logical Drive

WebBIOS manages Virtual Drive by a number beginning with 0. You can see a number of Virtual Drive where [VD X] in Virtual Drives.

Universal RAID Utility manages Logical Drive by a number beginning with 1. You can see a number of Logical Drive where [Number] in the property of Logical Drive on RAID Viewer or [RAID Controller #X Logical Drive #Y] in the property of Logical Drive on raidcmd.

In addition, you can see the number of Logical Drive managed by WebBIOS where [ID] in the property of Logical Drive by Universal RAID Utility.

Disk Array

WebBIOS manages Disk Array by a number beginning with 0. You can see a number of Disk Array where [DG X] in Physical Drives and Virtual Drives.

Universal RAID Utility manages Disk Array by a number beginning with 1. You can see a number of Disk Array where [Disk Array] in the property of Logical Drive on RAID Viewer or [RAID Controller #X Disk Array #Y] in the property of Disk Array on raidcmd.

Physical Drive and Physical Device

WebBIOS manages Physical Drive by two numbers (Slot number and Connector number, beginning with 0). You can view these numbers shown by [x:x:x] in Physical Drives box. You can view these numbers on Physical Drives properties.

Universal RAID Utility manages Physical Device by a number beginning with 1 and ID, Enclosure number, and Slot number. The numbers of Hard Disk Drives connected to the controller are sorted in ascending order based on ID and assigned number beginning with 1, starting from the smallest number. The ID is same value of Slot number shown in WebBIOS. Enclosure number and Slot number are assigned with a number beginning with 1. To view these numbers on Universal RAID Utility, select properties of the Hard Disk Drive and see [Number] and [ID], [Enclosure], and [Slot] (RAID Viewer), or [RAID Controller #X Physical Drive #Y] and [ID], [Enclosure], and [Slot] (raidcmd).

Setting of Priority

WebBIOS displays and sets Rebuild Priority, Patrol Read Priority, and Consistency Check Priority of RAID Controller by percentage. However, Universal RAID Utility uses three levels as High/Middle/Low for them.

NOTES:

- WebBIOS can set BGI Rate (Background Initialize Priority). However, Universal RAID Utility cannot set it.
- Universal RAID Utility can set Initialization Priority. However, Internal RAID Controller does not have the function of the setting of Initialization Priority. Therefore, Universal RAID Utility does not display [Initialization Priority] in the [Options] tab of RAID Viewer. In addition, you will fail if you change the Initialization Priority by raidcmd.

See the table below for correspondence.

Setting value of WebBIOS and the display level of Universal RAID Utility

Item	Setting value of WebBIOS	Universal RAID Utility level
Rebuild Priority Rebuild Rate (WebBIOS)	80 to 100	High
	31 to 79	Middle
	0 to 30	Low
Patrol Read Priority Patrol Read Rate (WebBIOS)	80 to 100	High
	31 to 79	Middle
	0 to 30	Low
Consistency Check Priority CC Rate (WebBIOS)	80 to 100	High
	31 to 79	Middle
	0 to 30	Low

Setting level of Universal RAID Utility and the setting value

Item	Setting level of Universal RAID Utility	Setting value
Rebuild Priority Rebuild Rate (WebBIOS)	High	90
	Middle	50
	Low	10
Patrol Read Priority Patrol Read Rate (WebBIOS)	High	90
	Middle	50
	Low	10
Consistency Check Priority CC Rate (WebBIOS)	High	90
	Middle	50
	Low	10

Creating a RAID 6 Logical Drive

To create a Logical Drive of RAID 6 using the Universal RAID Utility, at least four Hard Disk Drives are required. If you want to create a Logical Drive of RAID6 with three Hard Disk Drives, you need to use WebBIOS.

IMPORTANT: WebBIOS does not support the RAID6 logical drive having Stripe Size: 8KB composed of three Hard Disk Drives.

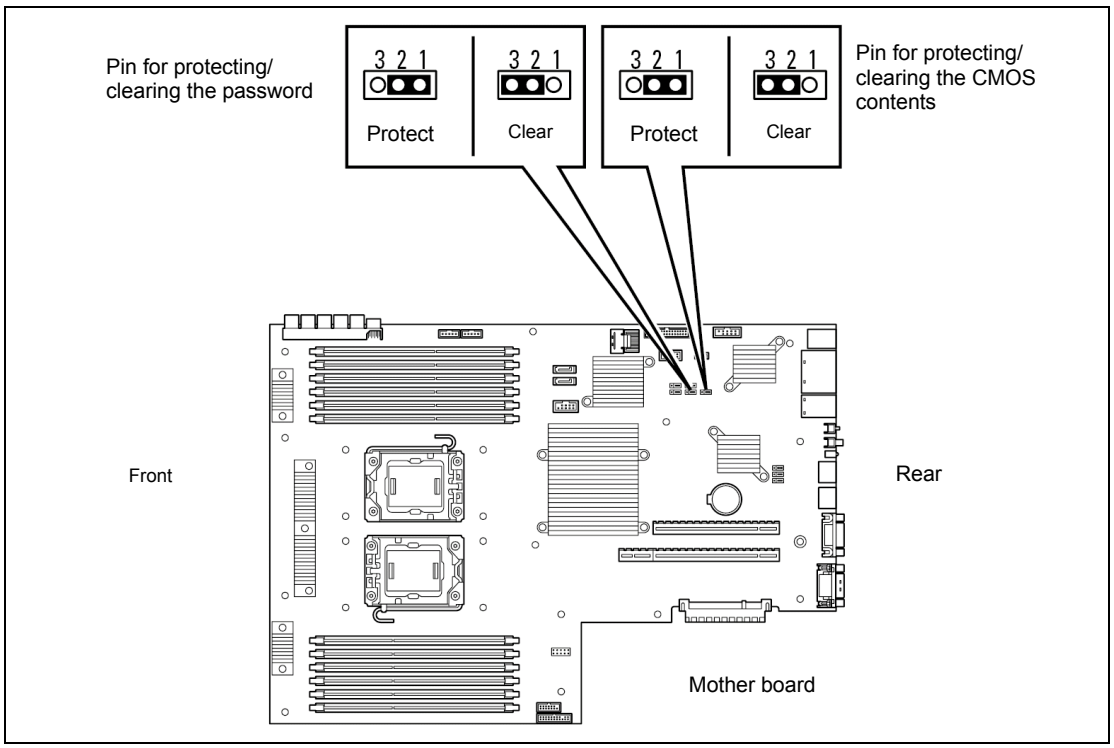
CONFIGURING MOTHER BOARD JUMPERS

With the pre-installed SETUP utility, you can set desired passwords to protect the data stored in the server against access from unauthorized users. When you forget the passwords, however, you may want clear them. The following describes how to clear these passwords. You can also use the following procedure to clear the CMOS data in the server.

IMPORTANT:

- Clearing the CMOS data resumes the factory-set configuration data.
- After clearing CMOS, you must run the BIOS SETUP utility and execute the following menus to reconfigure your mother board.
  – Load Setup Defaults in the Exit menu
  – Memory Retest of Memory Configuration in the Advanced menu
  – Processor Retest of Processor Settings in the Main menu
- Refer to "RAID System Configuration" described earlier in this chapter for RAID configuration jumper setting.
- Do not change any other switch settings. Any change may cause the server to fail or malfunction.

To clear passwords or the CMOS data, use the jumper switch on the mother board of the server. The following figure illustrates the jumper switch location.



The following describe the clearing procedure.

WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-12 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.
- Do not connect the ground line to a gas pipe.

CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-12 for details.

- Never attempt to lift the server only by yourself.
- Make sure to complete board installation.
- Do not install the server on a rack with leaving covers removed.
- Do not pinch your finger with mechanical components.
- Note high temperature.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.

Clearing CMOS Data

1. See the section "Preparing for Installation and Removal" as described in Chapter 9 of this guide to prepare.
2. Remove the top cover (see Chapter 9).
3. Locate the position of the jumpers on the mother board you are changing.
4. Move the jumper strap to the CMOS clear position.

   Refer to the previous illustration to find the location of the jumper.
5. Wait for a while (about 5 seconds), and then reinstall the jumper block to the default position.
6. Reinstall the server removed in Step 2.
7. Plug the power cord to your server and turn on the server.
8. Press **F2** at the prompt to run the BIOS SETUP utility, and select "Load Setup Defaults" at the Exit menu.

Clearing Password

1. See the section "Preparing for Installation and Removal" as described in Chapter 9 of this guide to prepare.
2. Remove the top cover (see Chapter 9).
3. Locate the position of the jumpers on the mother board you are changing.
4. Move the jumper strap to the password clear position.

   Refer to the previous illustration to find the location of the jumper.
5. Reassemble the server, and press the POWER switch to turn on the server.
6. Press **F2** during POST to run the BIOS Setup utility, set the password again, and select [Exit Saving Changes].
7. Power off the server, and move the jumper strap to the password protect position.
8. Reassemble the server.

Chapter 5

Installing the Operating System with Express Setup

This section describes information on using Express Setup to install and configure the following operating systems to the server.

- Microsoft® Windows Server® 2008 Standard 32-bit (x86) Edition / Microsoft® Windows Server® 2008 Enterprise 32-bit (x86) Edition
- Microsoft® Windows Server® 2003 R2 Standard Edition / Microsoft® Windows Server® 2003 R2 Enterprise Edition
- Microsoft® Windows Server® 2003 Standard Edition / Microsoft® Windows Server® 2003 Enterprise Edition

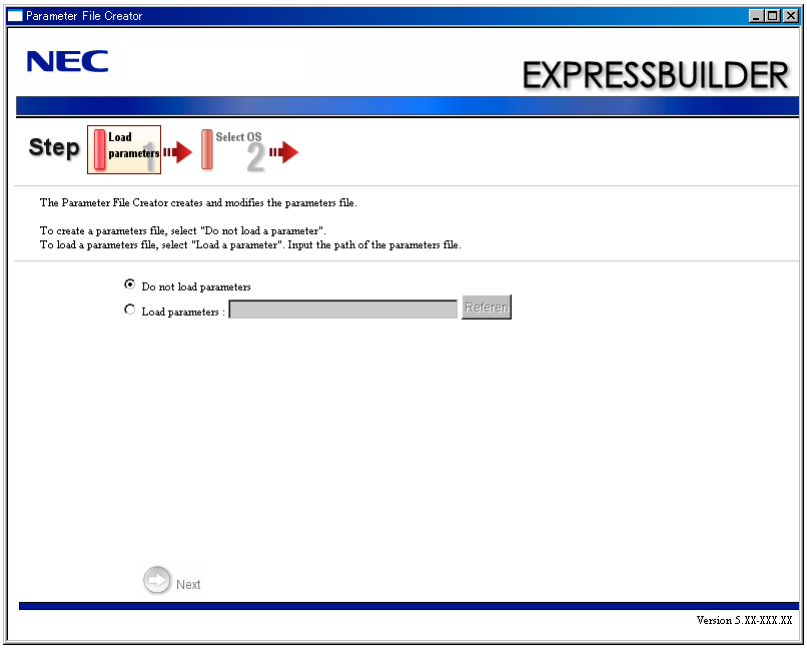
To use the server with the other operating systems described in this section, contact your service representative.

IMPORTANT: Before installing the operating system, adjust the system date and time by using the BIOS setup utility "SETUP." See Chapter 4 for detail.

About Express Setup

"Express Setup" helps you to install the Windows Operating System. The setup automatically configures the RAID System and installs the Operating System and some management software.

IMPORTANT: Executing the Express Setup erases all data on the hard disk drive.



You can also use "Parameter File" at "Express Setup" in order to save or backup parameters for installation.
If you want to set up the server as before, execute the Express Setup with the parameter file you have saved before.

NOTES:

- If you want to create a parameters file, have a blank floppy disk (MS-DOS 1.44MB format) ready.
- When using a floppy disk, a USB floppy disk drive is required.
- If you want to use the drivers located on the "OEM-Disk for Mass Storage Device" that ships with optional boards, a parameters file is mandatory.
- You can create a parameters file in advance using "Parameter File Creator" included in NEC EXPRESSBUILDER.

Windows Server 2008

This section explains how to install Windows Server 2008 by using the Express Setup.

NOTES:

- Express Setup does not support the installation of Windows Server 2008 64-bit (x64) Edition. If you want to install it, see Appendix D.
- If you install Windows Server 2008 without using Express Setup, see Appendix D.

Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

About the Windows Family

This computer supports the following Windows editions:

- Microsoft® Windows Server® 2008 Standard 32-bit (x86) Edition / Microsoft® Windows Server® 2008 Enterprise 32-bit (x86) Edition (hereinafter, referred to as "Windows Server 2008")

NOTE: Express Setup does not support the installation of Windows Server 2008 64-bit (x64) Edition. If you want to install it, see Appendix D.

On installing other OS, contact sales dealer or the maintenance service representative.

BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2008.

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008
  - OS installation media (No Service Pack)

Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD attached to your system supports the following mass storage controllers for installation.

- Controllers supporting installation of OS with Express Setup
  - Internal RAID Controller (equivalent to N8103-116A)
  - N8103-116A RAID Controller (128MB, RAID0/1)
  - N8103-117A RAID Controller (128MB, RAID0/1/5/6)
  - N8103-118A RAID Controller (256MB, RAID0/1/5/6)
  - Onboard RAID Controller (LSI Embedded MegaRAID™)
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*
  - N8190-127 Fibre Channel Controller*
  - N8190-131 Fibre Channel Controller (2ch)*
  - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)

  * Option

About the Hardware Components

When you install the Windows Server 2008, Express Setup requires several preparations if this computer uses the following hardware components.

Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using Disk Management, invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using Disk Management in Computer Management.

Mounting MO Device

Do not mount an MO device on this computer during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on this computer during the Windows installation.

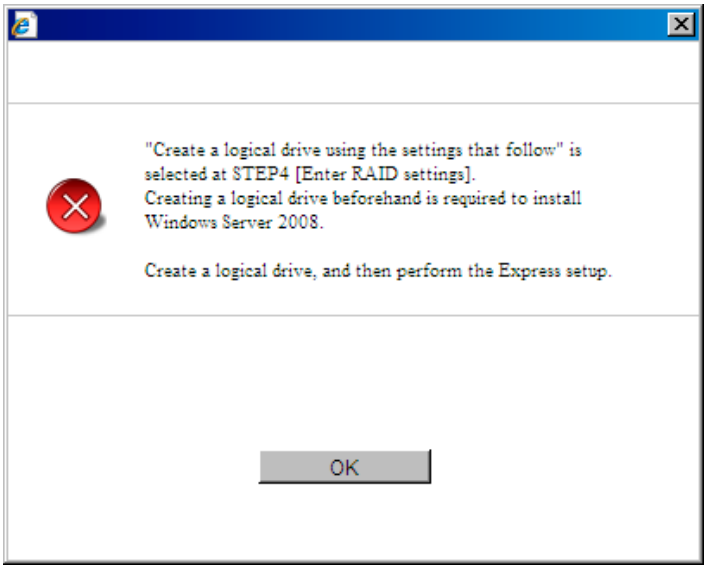
Re-installing to the hard disk drive which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2008 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

If you want to keep the current partition remained, see Appendix D to re-install the system.

Case of using RAID Controller

When you install Windows Server 2008 32bit (x86) Edition by Express Setup after RAID is newly constructed, the following message may be displayed.


"Create a logical drive using the settings that follow" is selected at STEP4 [Enter RAID settings].
Creating a logical drive beforehand is required to install Windows Server 2008.
Create a logical drive, and then perform the Express setup.
OK

When the message is displayed, refer to following procedure and create RAID beforehand.

- Creating RAID manually

  Refer to [RAID Configuration (Chapter 4)].

- Creating RAID using EXPRESSBUILDER

  Refer to "Creating new RAID using RAID Controller (Page 5-72)".

About the System Partition Size

When the system is Windows Server 2008 32-bit (x86) Edition

Required partition size	=	size required to install OS + paging file size + dump file size + application size
Size required to install OS	=	6,300MB (Full Installation) or = 2,200MB (Server Core Installation)
Paging file size (recommended)	=	Installed memory size x 1.5
Dump file size	=	Installed memory size + 300MB
Application size	=	Required size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

Example:

The partition size required for a system with an installed memory size of 512 MB and a full installation of the operating system:

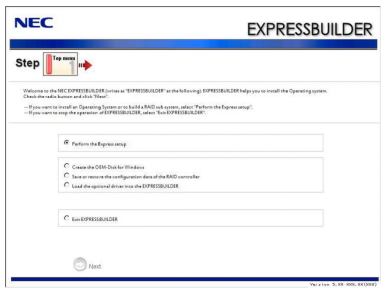
6,300MB + (512MB x 1.5) + 512MB + 300MB + application size
= 7,880MB + application size.

If the partition where the operating system is installed is smaller than that required to install the OS and paging file, expand the partition size or use a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file on to another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

Flow of Setup



Loading parameters (Step 2)

Skip

Next

Select the operating system (Step 3)

Next

RAID configuration (Step 4)

Next

Windows Confirm Setting / Input
(Steps 5 to 10)

Next

Save parameters (Step 11)

Next

Start Express Setup (Step 12)

Perform

RAID Configuration

Create the OS partition / format

Copying Windows driver
↓
Copying Selected Application

Remove the Floppy Disk and CD/DVD-ROM from the Drive

Insert Windows CD-ROM

Install OS Automatically

Agree Software License Agreement

Log on

The installation is completed.

: Process that needs to input or select

: Process that proceeds automatically

Installing the Windows Server 2008

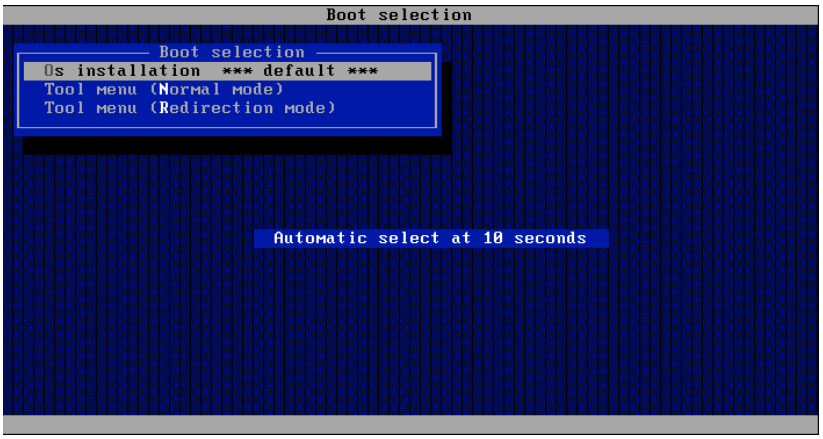
Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Press the RESET switch or press Ctrl, Alt, and Delete to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD and NEC EXPRESSBUILDER starts.

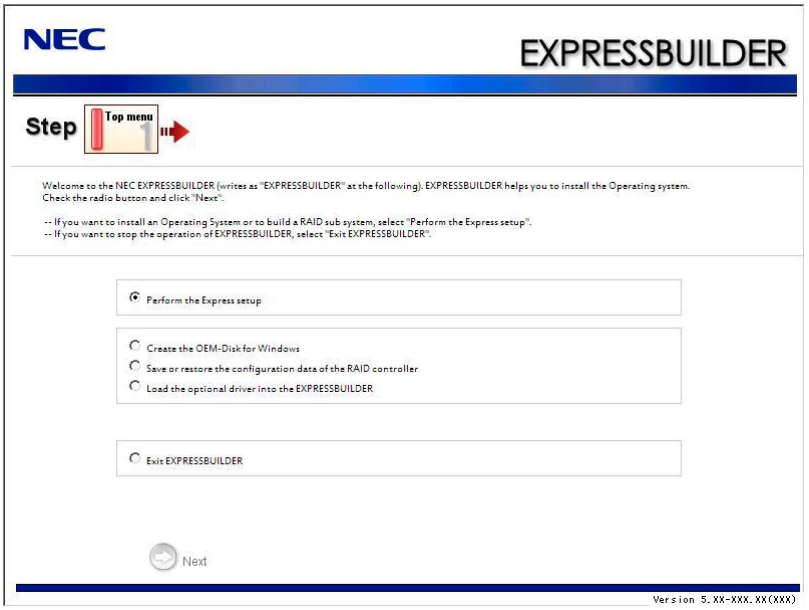
   Select "Os installation *** default ***" from the Boot selection menu.
   (If you do not hit any key, "Os installation" is selected automatically.)

   The Top menu will appear.

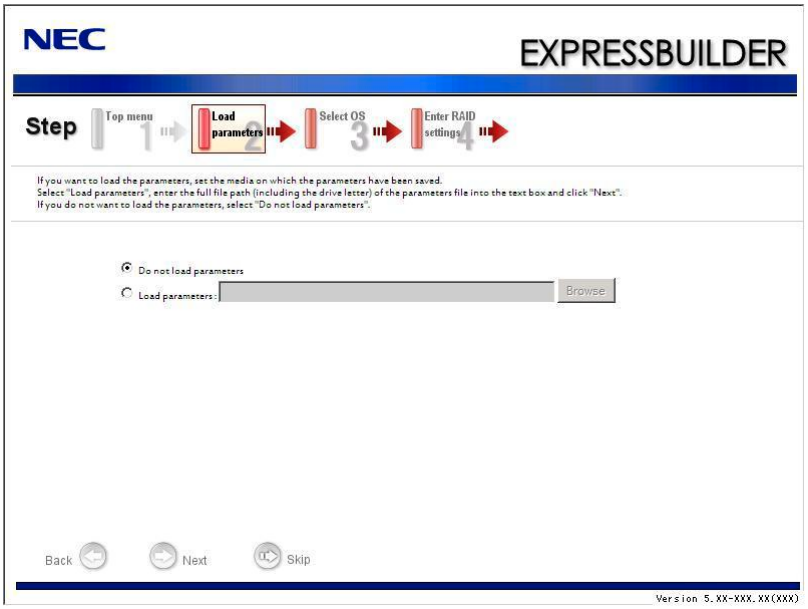


4. Select [English] from the Select Language, click [OK].

5. Select [Perform the Express setup] from the Top Menu, click [Next].


NEC
EXPRESSBUILDER
Step
Top menu
Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".
-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".
Perform the Express setup
Create the OEM-Disk for Windows
Save or restore the configuration data of the RAID controller
Load the optional driver into the EXPRESSBUILDER
Exit EXPRESSBUILDER
Next
Version 5.XX-XXX.XX(XXX)

6. [Load parameters] steps are displayed.


NEC
EXPRESSBUILDER
Step
Top menu
Load parameters
Select OS
Enter RAID settings
If you want to load the parameters, set the media on which the parameters have been saved.
Select "Load parameters", enter the full file path (including the drive letter) of the parameters file into the text box and click "Next".
If you do not want to load the parameters, select "Do not load parameters".
Do not load parameters
Load parameters:
Browse
Back
Next
Skip
Version 5.XX-XXX.XX(XXX)

[Do not load parameters]

(1) Select [Do not load parameters].

(2) Click [Next].

NOTE: If a floppy disk drive is not connected, select this item.

[Load parameters]

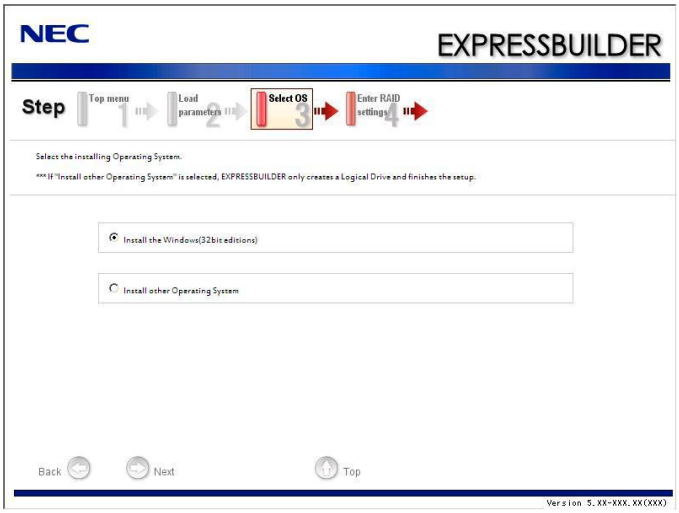
(1) Insert the floppy disk containing the parameters file.

(2) Select [Load parameters], enter the file path of the parameters file into the text box.

(3) Click [Next].

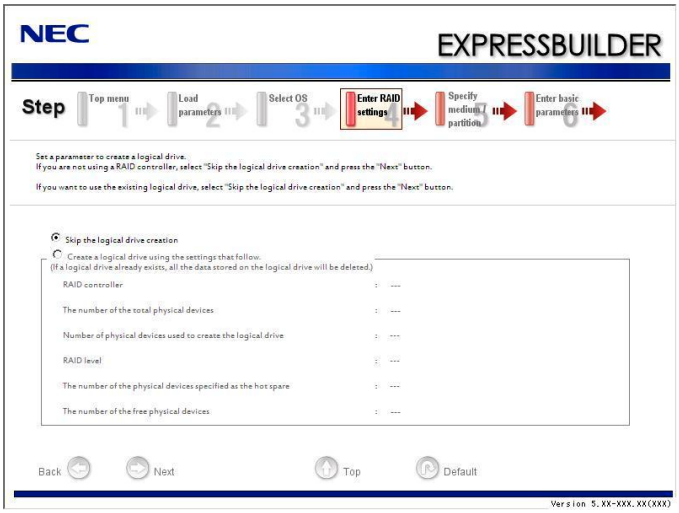
7. Select the installing Operating System.

Select [Install the Windows (32bit editions)] from the menu, click [Next].



8. Enter the setting of a logical drive.

[Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

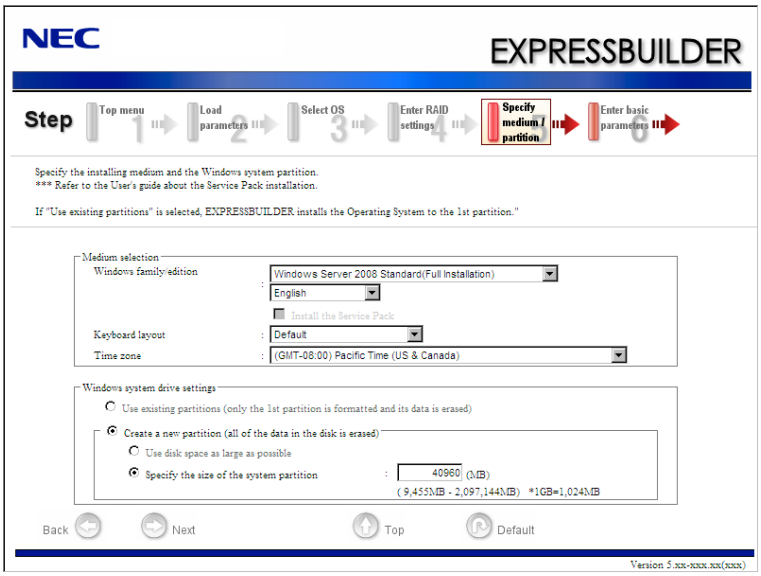

NEC
EXPRESSBUILDER
Step
Top menu
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Set a parameter to create a logical drive.
If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button.
If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.
Skip the logical drive creation
Create a logical drive using the settings that follow.
(If a logical drive already exists, all the data stored on the logical drive will be deleted.)
RAID controller
The number of the total physical devices
Number of physical devices used to create the logical drive
RAID level
The number of the physical devices specified as the hot spare
The number of the free physical devices
Back
Next
Top
Default
Version 5.XX-XXX.XX(XXX)

NOTES:

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.
- When you use RAID Controller, if [Skip the logical drive creation] is not selected at [Enter RAID settings] screen, refer to "RAID Configuration (Chapter 4)" or "Creating new RAID using RAID Controller (Page 5-72)" to create RAID beforehand.

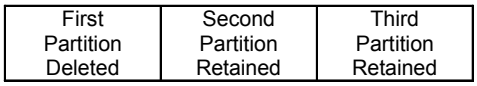
9. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.
If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition."
Medium selection
Windows family/edition
Windows Server 2008 Standard(Full Installation)
English
Install the Service Pack
Keyboard layout
Default
Time zone
(GMT-08:00) Pacific Time (US & Canada)
Windows system drive settings
Use existing partitions (only the 1st partition is formatted and its data is erased)
Create a new partition (all of the data in the disk is erased)
Use disk space as large as possible
Specify the size of the system partition
40960 (MB)
(9,455MB - 2,097,144MB) *1GB=1,024MB
Back
Next
Top
Default
Version 5.xx-xxx.xx(xxx)

IMPORTANT:

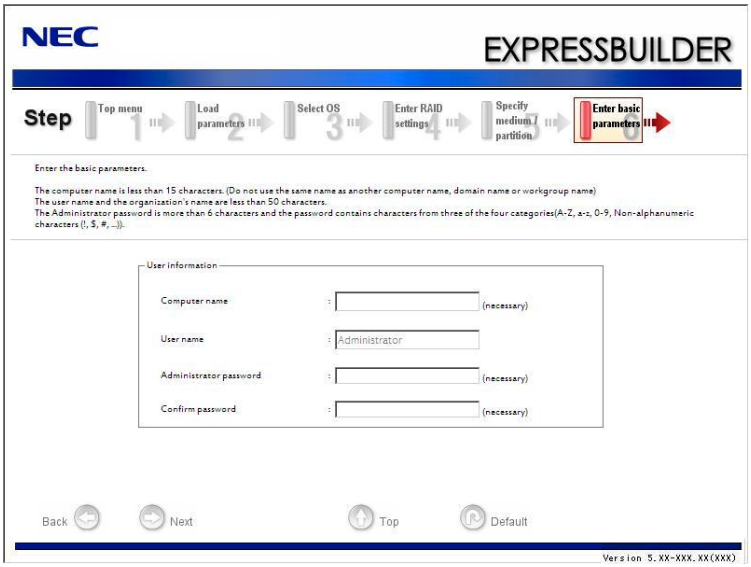
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)



- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

10. Enter the user information and client license mode.

[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

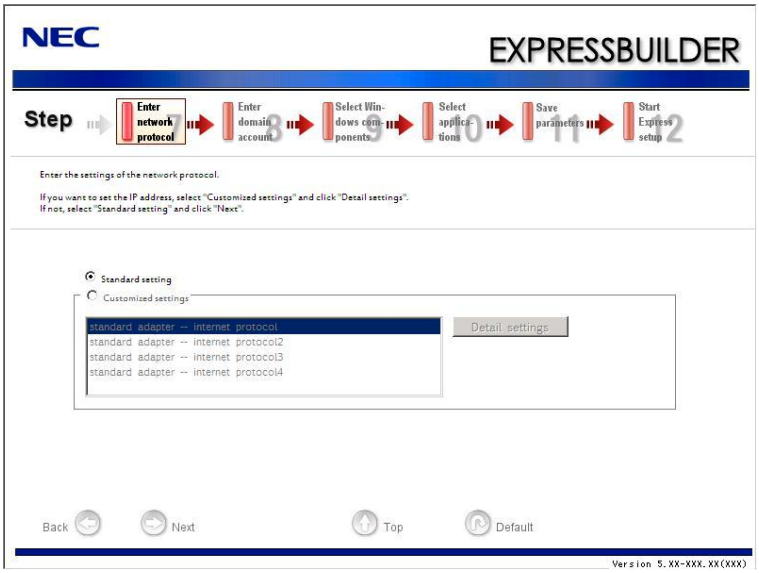


IMPORTANT: Computer name and Administrator password that satisfy the next condition, are required.

- More than 6 characters
- Contains characters from three of the following categories (numbers, uppercase letters, lowercase letters, and signs).

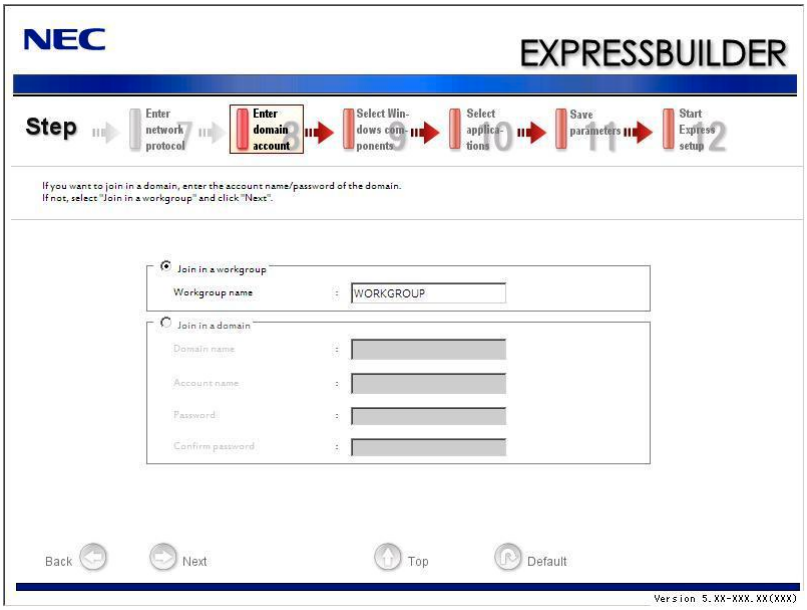
11. Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



12. Enter the domain or workgroup name to be used.

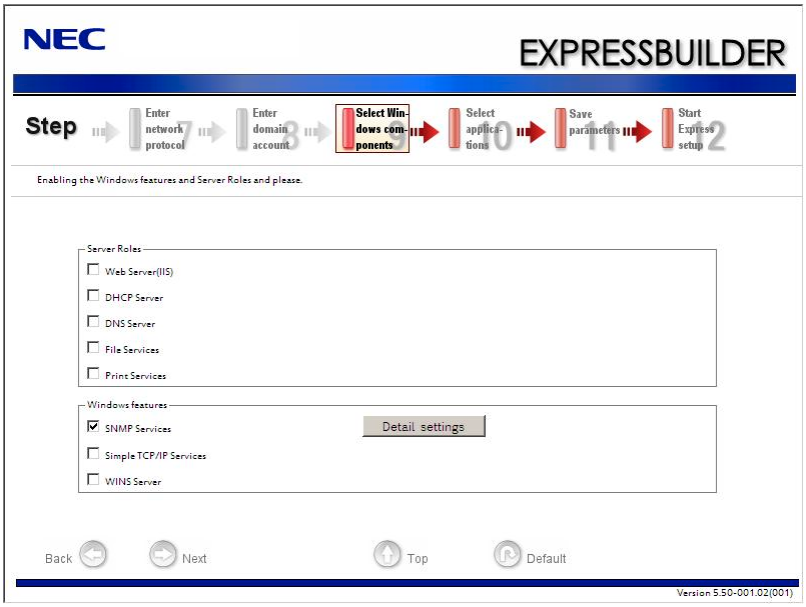
[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



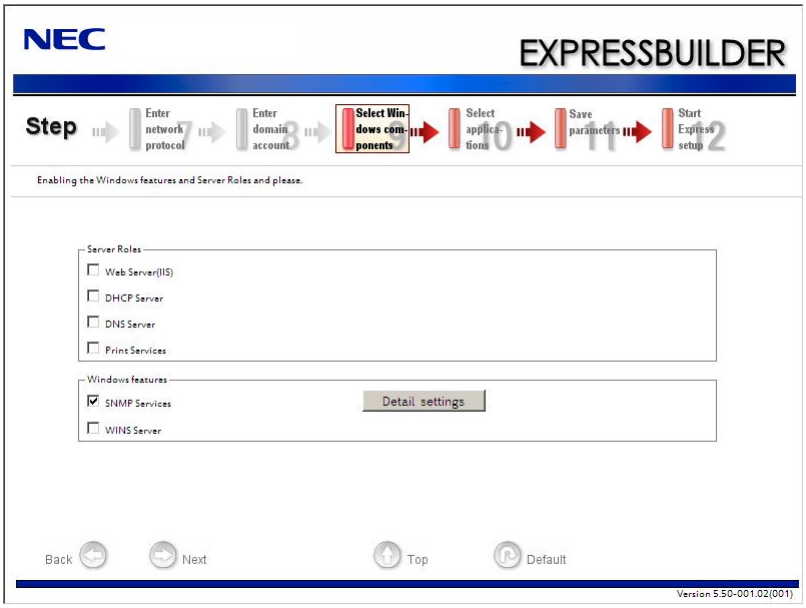
13. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

<Full Installation>

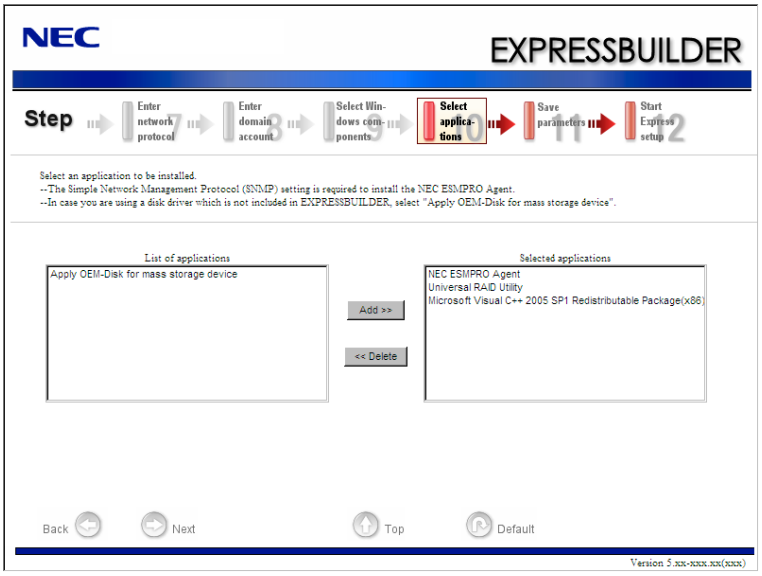


<ServerCore Installation>



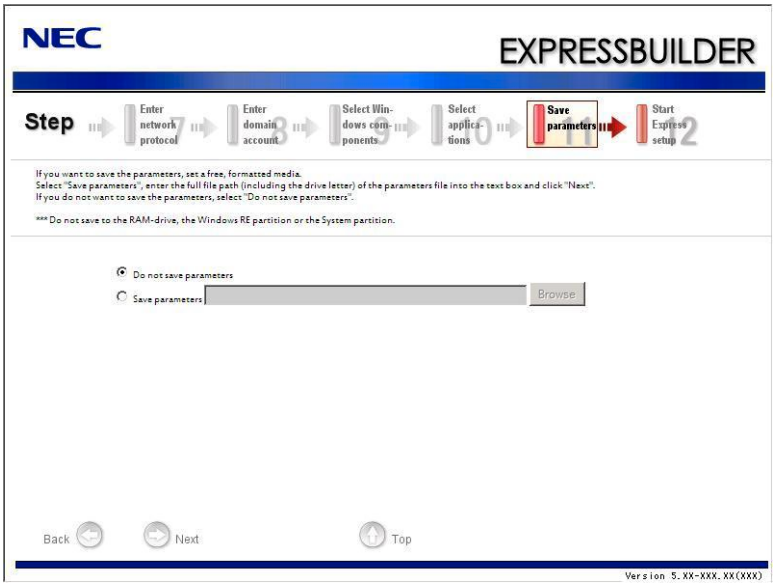
14. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



15. Save the parameters.

[Save parameters] steps are displayed.

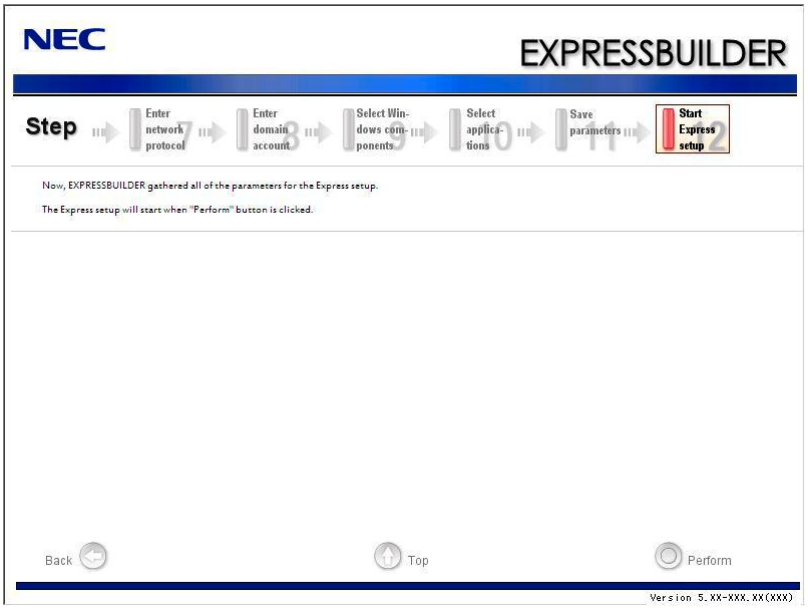

NEC
EXPRESSBUILDER
Step
Enter network protocol
Enter domain account
Select Windows components
Select applications
Save parameters
Start Express setup
If you want to save the parameters, set a free, formatted media.
Select "Save parameters", enter the full file path (including the drive letter) of the parameters file into the text box and click "Next".
If you do not want to save the parameters, select "Do not save parameters".
*** Do not save to the RAM-drive, the Windows RE partition or the System partition.
Do not save parameters
Save parameters
Browse
Back
Next
Top
Version 5.XX-XXX.XX(XXX)

If you want to save the parameters , set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

16. The Express Setup will start when you click [Perform] in [Start Express setup] step.



17. Copy optional Mass Storage Driver module.

If you install optional Mass Storage Driver, the message will be shown.

Insert CD-ROM or floppy disk attached to the Mass Storage Driver and proceed operation according to the message.

18. Remove NEC EXPRESSBUILDER DVD from the optical disk drive according to the message.

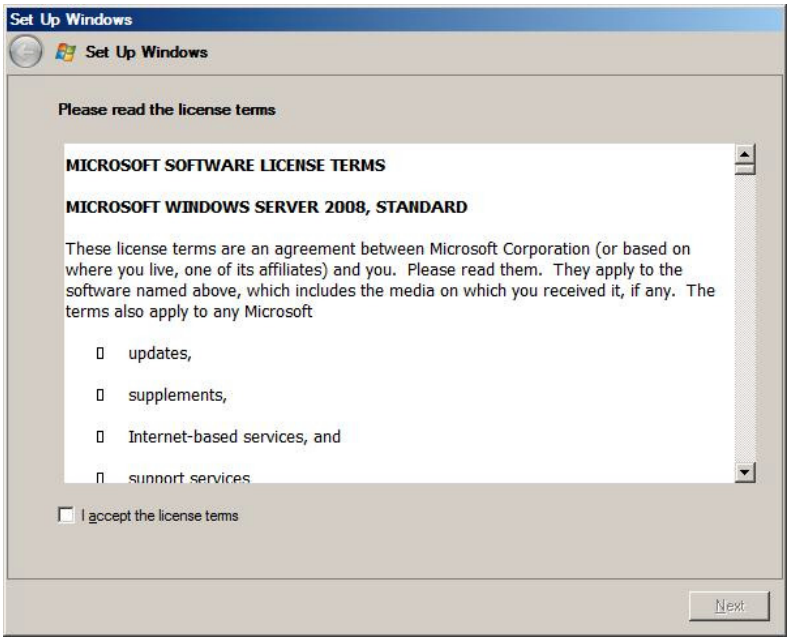
If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.

19. Insert Windows Server 2008 DVD-ROM into the optical disk drive.

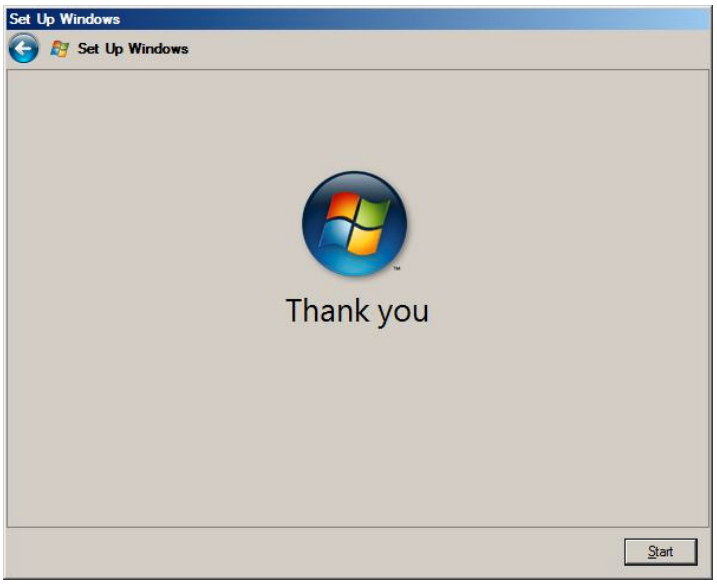
NOTE: Windows Server 2008 and selected applications will be installed automatically and reboots several times.

20. [Agree Software License Agreement] screen appears.

Read the license terms carefully. If you agree, select I accept the license terms, and then click [Next].


Set Up Windows
Set Up Windows
Please read the license terms
MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT WINDOWS SERVER 2008, STANDARD
These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft
updates,
supplements,
Internet-based services, and
support services
I accept the license terms
Next

21. When the following message appears, click [Start].



22. When the following message appears, press **Ctrl** + **Alt** + **Del**.

23. Log on to the system.

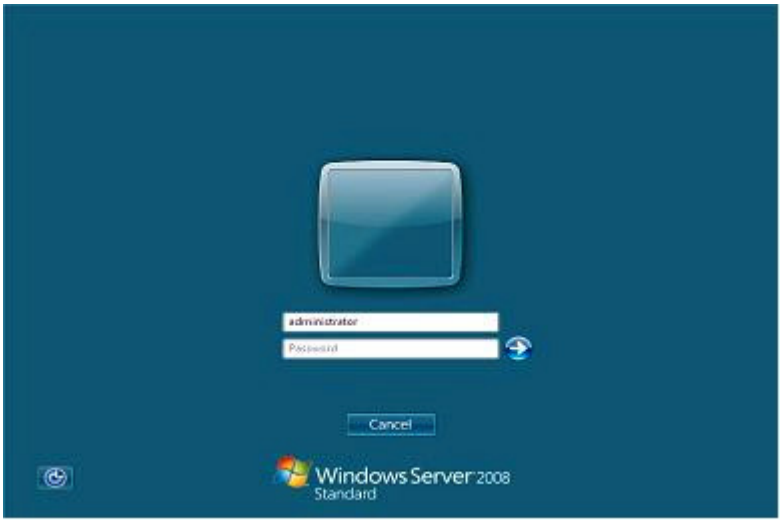
<Full Installation>

When the following screen appears, enter your password into "Password", and click .

<Server Core Installation>

When the following screen appears, click "Other User".

In the following screen, enter "Administrator" into [UserName], your password into "Password", and click .



Hereinafter, proceed operations according to the message.

Now the Setup using Express Setup has completed.

After Express Setup has completed, be sure to execute the tasks described in "Installing and Setting Device Drivers".

Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

LAN Driver and PROSet

The LAN driver and PROSet have been installed automatically while your system was being updated in the previous section.

> **NOTE:** To change the LAN driver and PROSet settings, log on to the system from a local console using an administrator account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.

Using N8104-125 Adapter after System Update

To use the N8104-125 Adapter after updating your system, you must first uninstall the LAN driver and PROSet, and then update your system with the N8104-125 Adapter connected.

For a server running a full installation

1. Remove a team of network adapters.

   > **NOTE:** Before you remove, note down the current settings (e.g. IP addresses) of the standard and optional adapters teamed for network redundancy.
   >
   > Configure the settings after reinstalling the LAN driver and PROSet.
   >
   > To remove the team, see "Adapter Fault Tolerance (AFT)/AdaptiveLoad Balancing (ALB)".

2. In [Control Panel], click [Uninstall Program].
3. Double-click [Intel(R) Network Connections 13.2.8.0].

   [Intel(R) Network Connections (Remove Options)] appears.
4. In [Remove Options], click [Remove].

   [Intel(R) Network Connections - Remove Software] appears.
5. Select [Yes].

   The uninstallation starts automatically.
6. When [InstallShield Wizard Completed] appears. Click [Finish].

   Restart the system.

For a server running a Server Core installation

1. Note down the current settings (e.g. IP addresses) of the standard and optional adapters teamed for network redundancy before uninstalling LAN driver.

   Configure the settings after reinstalling the LAN driver.

2. At a command prompt, run dxsetup.exe in your removable medium containing the Driver Set.

   – Windows Server 2008 64-bit (x64) Editions:
   <drive latter>:\009\win\winnt\ws2008x64\ma21\apps\prosetdx\vistax64\dxsetup.exe

   – Windows Server 2008 32-bit (x86) Editions:
   <drive latter>:\009\win\winnt\ws2008\ma21\apps\prosetdx\vista32\dxsetup.exe

3. In [Intel(R) Network Connections - InstallShield Wizard], click [Next].

4. Select [Remove], and click [Next].

5. Click [Remove].

   Uninstallation starts automatically.

6. When [InstallShield Wizard Completed] appears, click [Finish].

   Restart the system.

Network Driver

Specify the details of network driver.

Two standard network drivers that are mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

1. Open the [Device Manager].
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

> **NOTE:** We recommend you to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

Optional Network Board Driver (N8104-112/119/120/121/122/125)

The following optional network boards are available for the N8104-112/119/120/121/122/125.

To use the N8104-125 Adapter, see" Using N8104-125 Adapter after System Update" in the previous page.

The drivers for other network boards are automatically installed by Windows Plug-and-Play. You do not need to install them manually.

Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the throughput by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

IMPORTANT:

- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches,they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.

Setup Teaming

IMPORTANT:

- Teaming is not supported with Windows Server Core.
- AFT/ALB setting must be done after System Update completed.
- N8104-120/121/122/125 does not support SFT.
- Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.

   Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].

IMPORTANT: Do not include the member adapter over than two.

6. Select a team type ([Adapter Fault Tolerance]/[Adaptive Load Balancing]).

   Click [Next].

7. Click [Finish].

8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team. Click [Settings] tab and click [Modify Team] button.

9. Refer to the following procedure to set the team member adapter priority status.

   – Set Primary
     Point the adapter and click [Set Primary] button.

   – Set Secondary
     Point the adapter and click [Set Secondary] button.

   NOTE: Adapter priority config can be confirmed by the following procedure:

   1. Click [TEAM: "Team name"] from [Device manager]→[Network adapters].
   2. Click [Settings] and confirm Adapters in team list.

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.

    Confirm the result in [Test results].

    Even if the system is normal, the following mismatch message will appear sometimes. Recheck the switching hub (L2) port and if there is no problem with the setting, ignore the messages.

    – The switch is configured with aggregatedd ports, but the team type does not support port aggregation. The switch is configured with VLAN tagging, but the team has no VLANs.
    – Change the team type to SLA, reconfigure the switch for link aggregation, or disable VLAN tagging on the switch.

11. Reboot the system.

Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter in not existing in [Network adapters] tree and reboot the system.

Setting WOL

Refer to the following procedure to enable WOL.

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Wake On Directed Packet"	ON	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	OFF	ON

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will maintained until manually resetting are executed.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network port are not available of WOL.

4. Click [OK].
5. Reboot the system.

IMPORTANT:

- WOL (Wake On Lan) is available only in system Shutdown mode.
- WOL (Wake On Lan) is not available in system Hibernate and Sleep mode.

Graphics Accelerator Driver

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.

Standard graphics accelerator drivers will be installed automatically.

Please refer to "Graphics Accelerator Driver" that exists in Appendix D-38 when you want to reinstall the driver individually.

Installing SCSI Controller Driver (N8103-75/95/107)

If you use the SCSI Controller N8103-75/95/107, you do not need to install the driver manually. It is automatically installed byWindows Plug-and-Play.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing RAID Controller Driver (N8103-115)

The installation procedure depends on your environment.

Follow steps below appropriate to your environment.

● If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is used:

You do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

● If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is not used:

Install the driver by the following procedures.

1. Start [Device Manager] from [Start] menu → [Administrative Tools]→ [Computer Management].
2. Double-click the "LSI Logic MegaRAID SAS 8880EM2 RAID Controller" which Device Manager lists as "Storage controllers".
3. Click [Update Driver].
4. When the "Update Driver Software- Logic MegaRAID SAS 8880EM2 RAID Controller Wizard" appears, select "Browse my computer for driver software".
5. Select "Let me pick from a list of device drivers on my computer".
6. Click [Have Disk..].
7. Insert "NEC EXPRESSBUILDER DVD" into the optical disk drive, enter "<drive letter>:\009\win\winnt\oemfd\ws2008\fd1\megasas" into "Copy manufacturer's files from:" and click [OK].
8. Specify the following driver and click [Next].
   - [LSI Logic MegaRAID SAS 8880EM2 RAID Controller]
9. Click [Close].

The installation of the driver is completed.

Restart the system.

Installing Fibre Channel Controller Driver (N8190-127/131)

If you use the Fibre Channel Controller N8190-127/131, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

> **IMPORTANT:** "/PAE option" is not supported on Windows Server 2008 Standard Edition.

In Windows Server 2008 system, the PAE option can be set by using Bcdedit.exe.

The setting procedure is as follows.

1. Click [Run] on [Start] menu.
2. Type "cmd.exe" in the [Open:] box to start command prompt.
3. Execute following command line.

   bcdedit /set pae forceenable
4. Reboot the system.

   The setting mentioned above enables after reboot.
5. Execute following command line on command prompt.

   bcdedit

   Confirm "pae ForceEnable" exists in "Windows boot loader".

   The setting for PAE option is now completed.

Refer following site about Bcdedit.exe.

"Boot Configuration Data Editor Frequently Asked Questions"

http://technet.microsoft.com/en-us/library/cc721886.aspx

Setting for Solving Problems

Setup your computer in advance so that it can recover from any trouble precisely and as soon as possible when it should occur.

For more information, refer to Page 5-58.

Windows Server 2003

This section explains how to install Microsoft® Windows Server® 2003 by using the Express Setup.

IMPORTANT: Be sure to prepare Windows Server 2003 CD-ROM that includes Service Pack 1.

NOTES:

- Express Setup does not support the installation of Windows Server 2003 x64 Editions. If you want to install it, see Appendix E.
- If you install Windows Server 2003 without using Express Setup, see Appendix F.

Notes on Windows Installation

This section explains the notes on the Windows installation.

Confirm these notes before starting the Express Setup.

About the Windows family

This computer supports the following Windows editions:

- Microsoft® Windows Server 2003® Standard Edition / Microsoft® Windows Server® 2003 Enterprise Edition (hereinafter, referred to as "Windows Server 2003")
- Microsoft® Windows Server 2003® R2 Standard Edition / Microsoft® Windows Server® 2003 R2 Enterprise Edition (hereinafter, referred to as "Windows Server 2003")

NOTE: Express Setup does not support the installation of Windows Server 2003 x64 Editions. If you want to install it, see Appendix E.

On installing other OS, contact sales dealer or the maintenance service representative.

BIOS Settings

Confirm the BIOS settings described in Chapter 4 before installing Windows Server 2003.

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2 x64 Edition
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)
- Windows Server 2003 R2
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)
- Windows Server 2003
  - OS installation media (with Service Pack 1)
  - OS installation media (with Service Pack 1) + Service Pack 2

Supported Mass Storage Controllers

The NEC EXPRESSBUILDER DVD attached to your system supports the following mass storage controllers for installation.

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device" and "Installing Optional Mass Storage Driver" of "Parameter File Creator" in Chapter 6.

- Controllers supporting installation of OS with Express Setup
  - Internal RAID Controller (equivalent to N8103-116A)
  - N8103-116A RAID Controller (128MB, RAID0/1)
  - N8103-117A RAID Controller (128MB, RAID0/1/5/6)
  - N8103-118A RAID Controller (256MB, RAID0/1/5/6)
  - Onboard RAID Controller (LSI Embedded MegaRAID™)
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*
  - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)

  * Option.

> **NOTES:**
>
> - The driver of option card mentioned above is stored in the EXPRESSBUILDER DVD.
> - If you use the board not mentioned above, the ExpressSetup will fail. Refer to the instructions attached to the board.

About the Hardware Components

When you install the Windows Server 2003, Express Setup requires several preparations if this computer uses the following hardware components.

Installing on the Mirrored Volume

If you want to install the Windows Server 2003 on the volume that is mirrored using "Disk Management", invalidate the mirroring and set back to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate or delete the mirror volume by using "Disk Management" in "Computer Management".

Mounting MO Device

Do not mount an MO device on this computer during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on this computer during the Windows installation.

Connecting Hard Disk Drive

Do not connect the other hard disk drives except the drive that you want to create the Windows system drive.

If you create multiple logical drives in your system, see "Re-installing the Operating system when multiple logical drive exist" (Appendix E).

Re-installing to the hard disk drive which has been upgraded to Dynamic Disk

You cannot re-install Windows Server 2003 with the current partition of the hard disk drive upgraded to Dynamic Disk kept remained.

If you want to keep the current partition remained, see Appendix E to re-install the system.

About the System Partition Size

The system partition size can be calculated from the following formula.

Size necessary to install the system + Paging File Size + Dump File Size + Application Size

Size necessary to install the system
= 3500MB (Windows Server 2003 R2)
= 3500MB (Windows Server 2003 with Service Pack1)
= 3500MB (Windows Server 2003 R2 with Service Pack2)
= 5300MB (Windows Server 2003 R2 + Service Pack 2 CD-ROM)
= 5300MB (Windows Server 2003 with Service 1 + Service Pack 2 CD-ROM)

Paging File Size (Recommended) = Mounted Memory Size * 1.5

Dump File Size = Mounted Memory Size + 12MB

Application Size = Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

3500MB + (512MB * 1.5) + (512MB + 12MB) + Application Size
= 4792MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

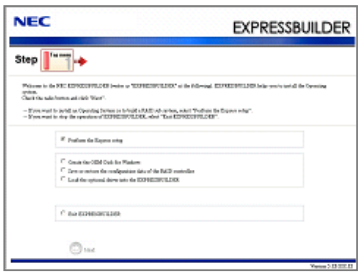
Installing the Service Pack

When installing Windows Server 2003 R2, it is not necessary to install the Service Pack 1.

When installing Windows Server 2003 R2, do not apply Service Pack by Express Setup.

Flow of Setup

This section visually describes the flow of the setup operated by Express Setup.



Loading parameters (Step 2)

Skip

Next

Select the operating system (Step 3)

Next

RAID configuration (Step 4)

Next

Windows Confirm Setting / Input
(Steps 5 to 10)

Next

Save parameters (Step 11)

Next

Start Express Setup (Step 12)

Perform

RAID Configuration

Create the OS partition / format

Copying Windows driver
↓
Copying Selected Application

Remove the Floppy Disk and CD/DVD-ROM from the Drive

Insert Windows CD-ROM

Agree Software License Agreement

Insert Service Pack CD-ROM
(When you apply the Service Pack)*

* Except Windows Server 2003 R2

Install OS Automatically
↓
Log on Automatically

The installation is completed.

: Process that needs to input or select

: Process that proceeds automatically

Installing the Windows Server 2003

Express Setup proceeds the setup by selecting or inputting several parameters on the wizard. You can also save the parameters to a floppy disk as a parameters file.

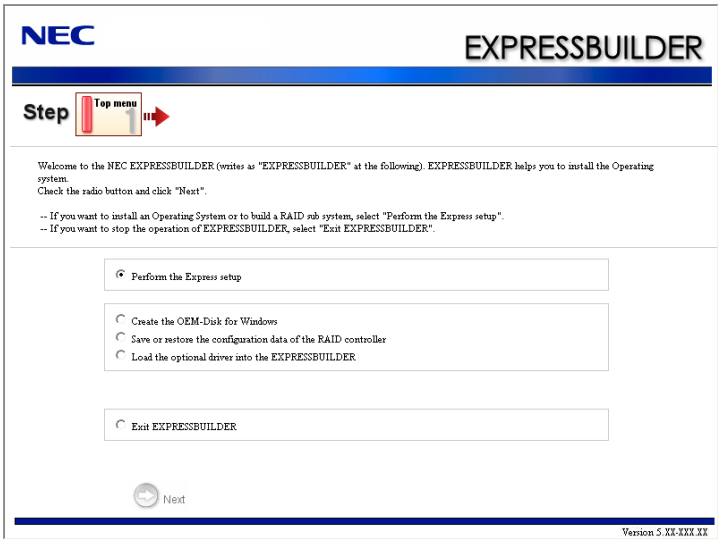
1. Turn the power of peripheral device on, and then turn on the server.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Press the RESET switch or press **Ctrl**, **Alt**, and **Delete** to reboot from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.

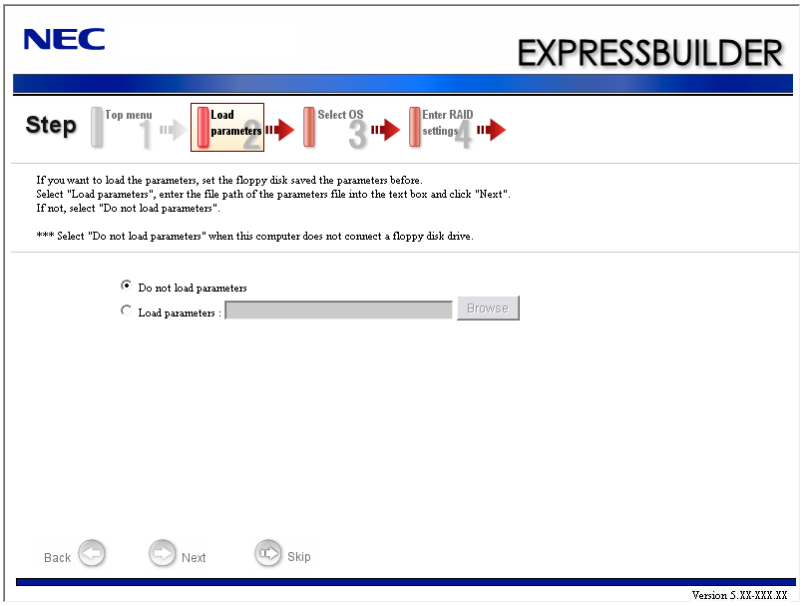
   Select "Os installation *** default ***" from the Boot selection menu. (If you do not hit any key, "Os installation" is selected automatically.)

   The Top menu will appear.
4. Select [English] from the Select Language, click [OK].

5. Select [Perform the Express setup] from the Top Menu, click [Next].


NEC
EXPRESSBUILDER
Step
Top menu
Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".
-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".
Perform the Express setup
Create the OEM-Disk for Windows
Save or restore the configuration data of the RAID controller
Load the optional driver into the EXPRESSBUILDER
Exit EXPRESSBUILDER
Next
Version 5.XX-XXX.XX

6. [Load parameters] steps are displayed.



[Do not load parameters]

(1) Select [Do not load parameters].

(2) Click [Next].

NOTE: If a floppy disk drive is not connected, select this item.

[Load parameters]

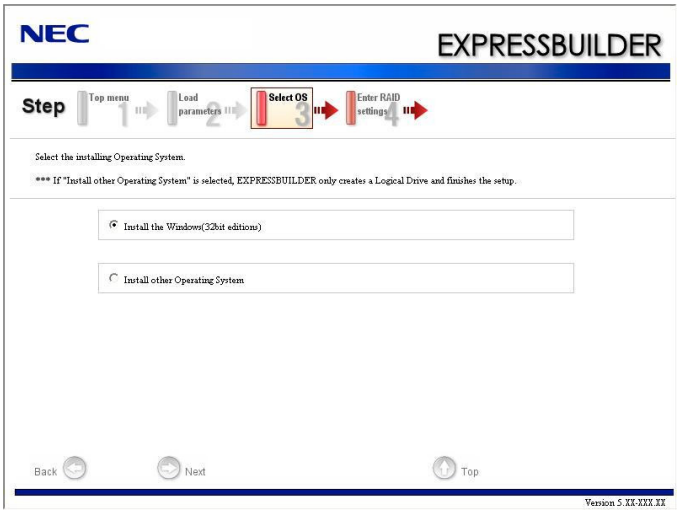
(1) Insert the floppy disk containing the parameters file.

(2) Select [Load parameters], enter the file path of the parameters file into the text box.

(3) Click [Next].

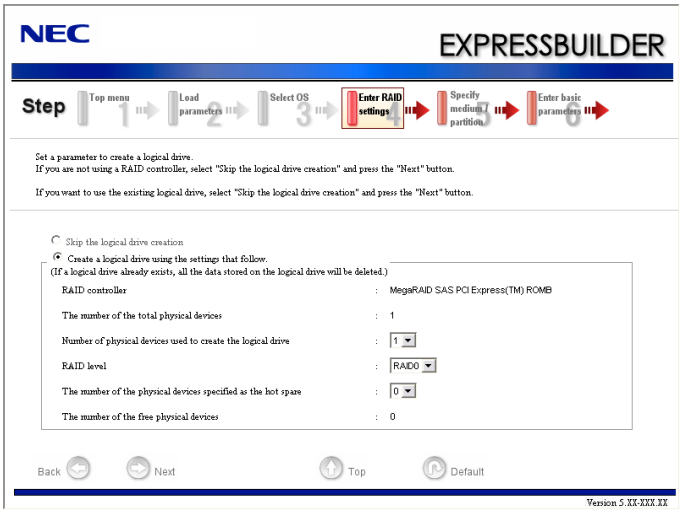
7. Select the installing Operating System.

Select [Install the Windows (32bit editions)] from the menu, click [Next].



8. Enter the setting of a logical drive.

[Enter RAID settings] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

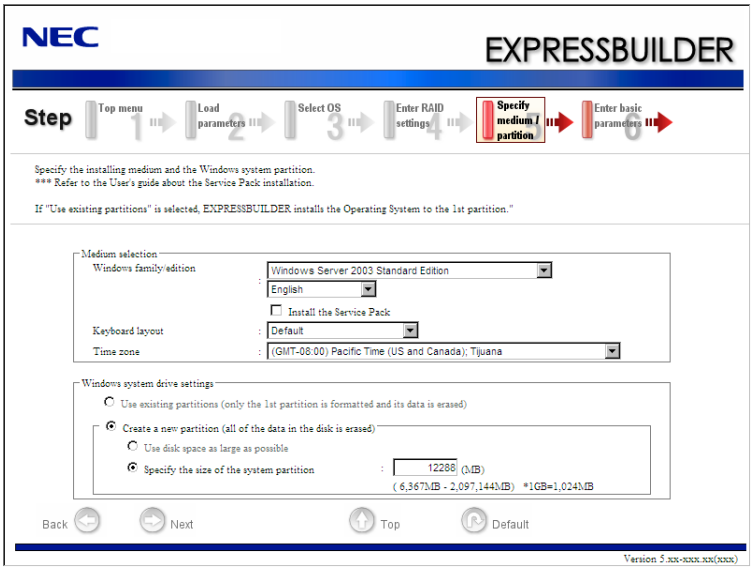

NEC
EXPRESSBUILDER
Step
Top menu
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Set a parameter to create a logical drive.
If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button.
If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.
Skip the logical drive creation
Create a logical drive using the settings that follow.
(If a logical drive already exists, all the data stored on the logical drive will be deleted.)
RAID controller : MegaRAID SAS PCI Express(TM) ROMB
The number of the total physical devices : 1
Number of physical devices used to create the logical drive : 1
RAID level : RAID0
The number of the physical devices specified as the hot spare : 0
The number of the free physical devices : 0
Back
Next
Top
Default
Version 5.XX-XXX.XX

NOTES:

- You can use only the physical devices that have same model number to configure logical drive.
- If the process is not finished normally, the driver may not be stored in the EXPRESSBUILDER. Refer to "Optional Board Supported by NEC EXPRESSBUILDER" described earlier in this chapter.

9. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


NEC
EXPRESSBUILDER
Step
Top menu
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.
If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition."
Medium selection
Windows family/edition
Windows Server 2003 Standard Edition
English
Install the Service Pack
Keyboard layout
Default
Time zone
(GMT-08:00) Pacific Time (US and Canada); Tijuana
Windows system drive settings
Use existing partitions (only the 1st partition is formatted and its data is erased)
Create a new partition (all of the data in the disk is erased)
Use disk space as large as possible
Specify the size of the system partition
12288 (MB)
(6,367MB - 2,097,144MB) *1GB=1,024MB
Back
Next
Top
Default
Version 5.xx-xxx.xx(xxx)

IMPORTANT:

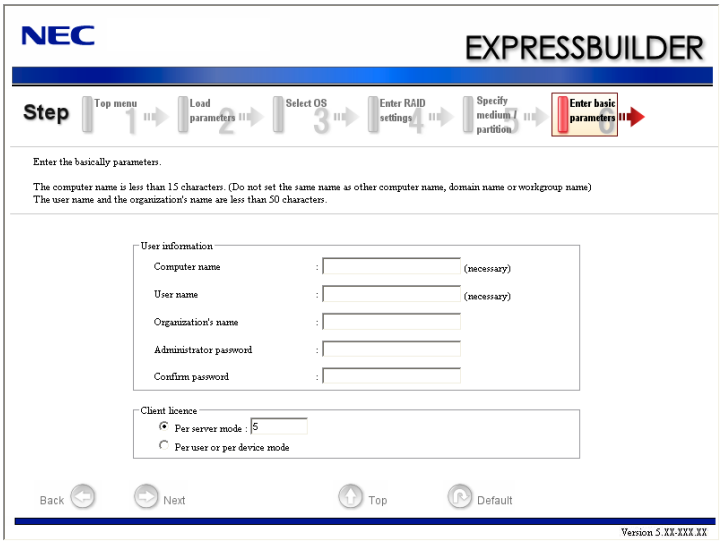
- If you install Windows Server 2003 R2, do not apply Service Pack by Express Setup. If you install Service Pack, apply Windows Server 2003 R2 DISC 2 after Express Setup completion, and then install Service Pack by "Updating the system".
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".

10. Enter the user information and client license mode.

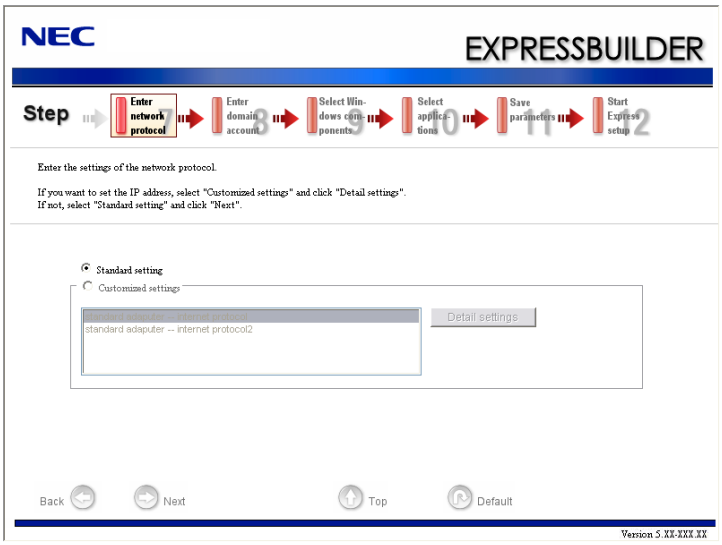
[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



NOTE: Even if you do not input value into "Administrator password", "Confirm password", "●●●●●" is displayed.

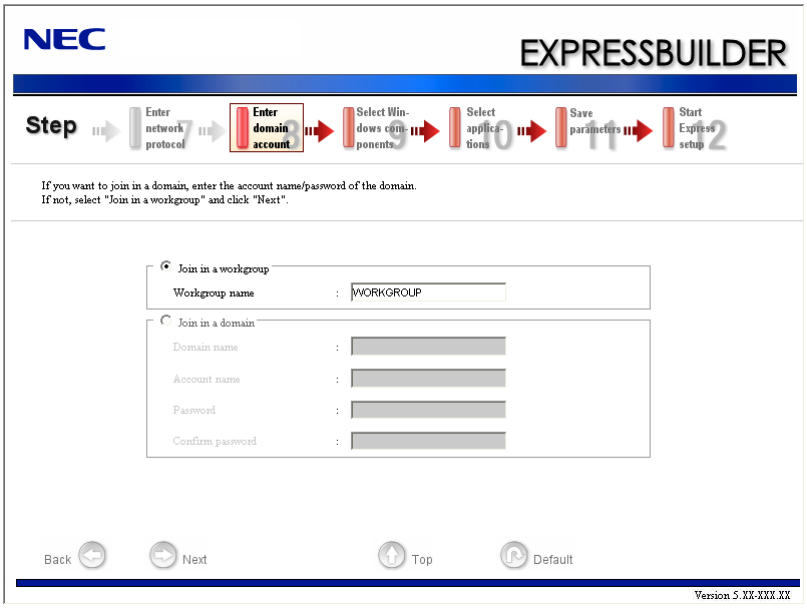
11. Enter the setting of the network protocol.

[Enter Network Protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



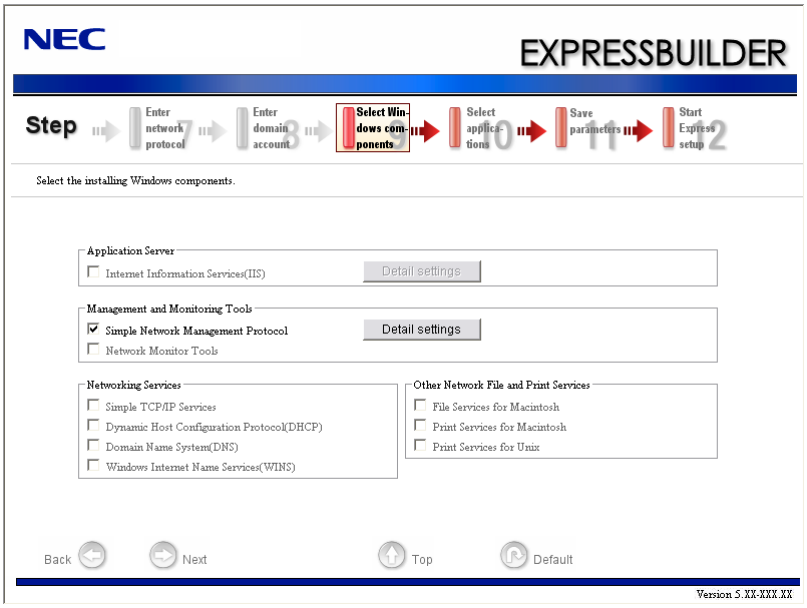
12. Enter the domain or workgroup name to be used.

[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



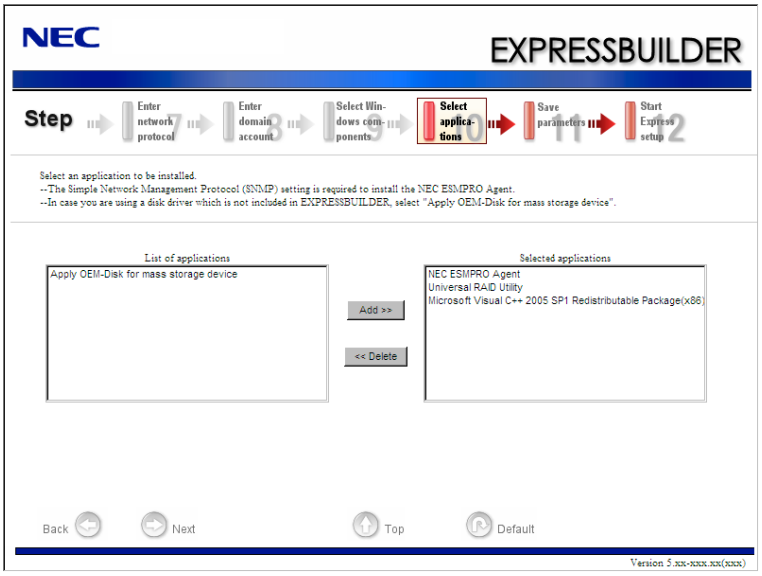
13. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



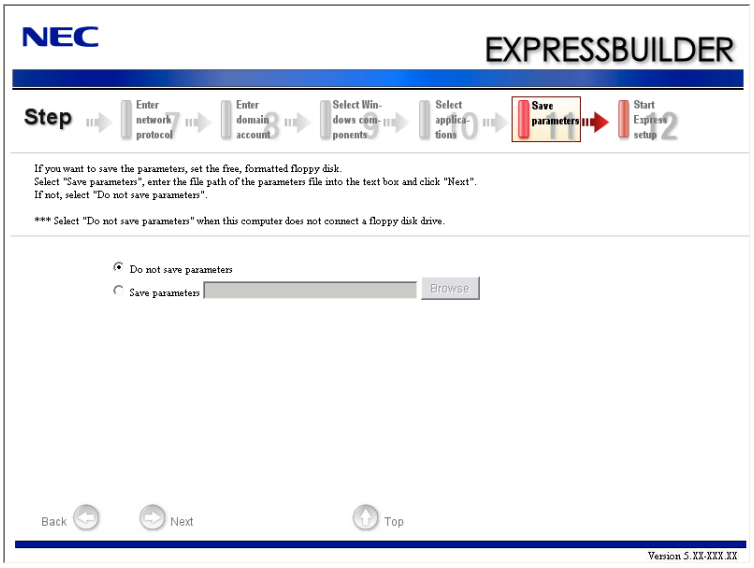
14. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



15. Save the parameters.

[Save parameters] steps are displayed.

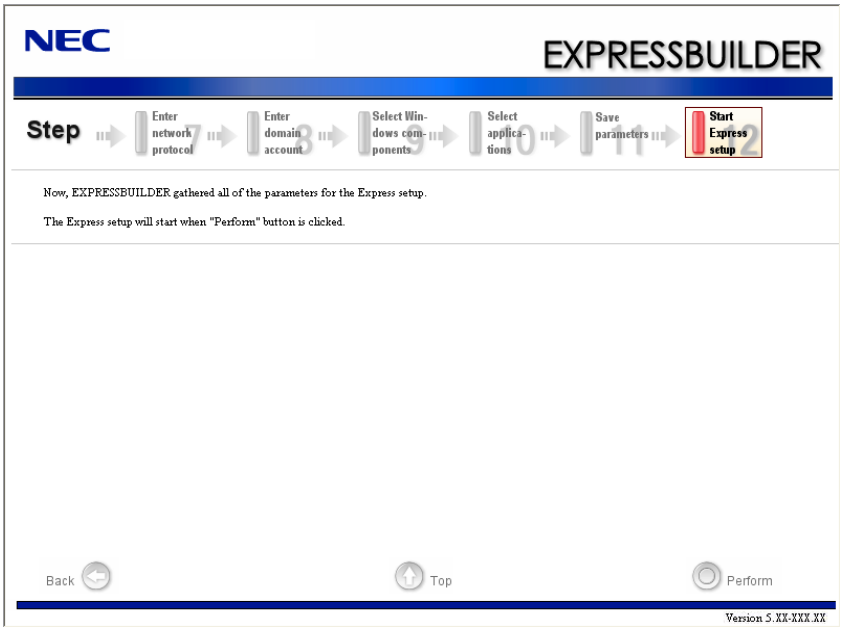

NEC
EXPRESSBUILDER
Step
Enter network protocol
Enter domain account
Select Windows components
Select applications
Save parameters
Start Express setup
If you want to save the parameters, set the free, formatted floppy disk.
Select "Save parameters", enter the file path of the parameters file into the text box and click "Next".
If not, select "Do not save parameters".
*** Select "Do not save parameters" when this computer does not connect a floppy disk drive.
Do not save parameters
Save parameters
Browse
Back
Next
Top
Version 5.XX-XXX.XX

If you want to save the parameters , set the free formatted floppy disk.

Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

16. The Express Setup will start when you click [Perform] in [Start Express setup] step.



17. Copy optional Mass Storage Driver module.

If you install optional Mass Storage Driver, the message will be shown.

Insert CD-ROM or floppy disk attached to the Mass Storage Driver and proceed operation according to the message.

18. Remove NEC EXPRESSBUILDER DVD from the optical disk drive according to the message.

If you proceed the setup by using setup parameter file, remove the floppy disk from the floppy disk drive.

Insert Windows Server 2003 CD-ROM into the optical disk drive.

[Agree Software License Agreement] screen appears.

19. Read the contents carefully and click [Yes] if you do agree. If you do not agree, click [No].

IMPORTANT:

- If you do not agree to this agreement, the setup terminates and Windows Server 2003 will not be installed.
- If "NetWare Gateway (and Client) Service" is specified to install, the window to specify the details of "NetWare Gateway (and Client) Service" pops up on the first logon. Specify the appropriate value.
- When the following message is displayed, click [OK] and input the product key.

> The setup script file does not contain a valid Product ID.
> Contact your system administrator for a valid Product ID.

20. If you selected [Install the Service Pack] at [Specify Medium Partition] step, follow the procedure below.

1) Follow the message to take Windows Server 2003 CD-ROM out of the optical disk drive.
2) Follow the message to insert Windows Server 2003 Service Pack 2 into the optical disk drive.

IMPORTANT:

- If you install Windows Server 2003 R2, do not apply Service Pack by Express Setup. If you install Service Pack, apply Windows Server 2003 R2 DISC 2 after Express Setup completion, and then install Service Pack by "Updating the system".
- If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

Windows Server 2003 and selected applications will be installed automatically and rebooted several times.

After rebooting, it logs on to the system automatically.

21. If you install Microsoft Windows Server 2003 R2, insert Microsoft Windows Server 2003 R2 Standard Edition DISC 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISC 2 into the optical disk drive after the OS installation.

Hereinafter, proceed operations according to the message.

When the installation has finished, remove Microsoft Windows Server 2003 R2 Standard Edition DISC 2 or Microsoft Windows Server 2003 R2 Enterprise Edition DISC 2 from the optical disk drive, and restart the system.

Now the Setup using Express Setup has completed.

Installing and Setting Device Drivers

Follow these steps to install and configure the device drivers.

PROSet

> **NOTE:** All of the operation that related to Intel® PROSet is must be executed by administrator privileges. Operation by [Remote Desktop Connection] is prohibited.
> Without changing any parameter when opened the properties of adapter teaming, please click the [Cancel] button for close the dialog. Click [OK] button will cause temporary loss of network connectivity.

PROSet is a utility that confirms the function of network contained in network driver.

Using PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to use these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "dxsetup.exe" in the following directory.

   \009\win\winnt\dotnet\ma21\apps\prosetdx\win32

   The [Intel(R) PROSet - InstallShield Wizard] dialog starts.

4. Click [Next].

5. Choose "I accept the terms in the license agreement" and click [Next].

6. Click [Next].

7. Click [Install].

8. When [InstallShield Wizard Completed] window is displayed, click [Finished].
9. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

When PROSet is not installed

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].

When PROSet is installed

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

NOTE: It is recommend to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet)that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

Optional Network Board Driver

For utilize an optional Network Board (N8104-111/112/119/120/121/122/125/126/123A), the network driver will be installed automatically. Therefore, the driver attached to the Network board should not be used.

If you want to use optional Network Board (N8104-111), install the driver stored in NEC EXPRESSBUILDER DVD.

In case of using (N8104-111)

"\009\win\winnt\dotnet\ma21\pro100\win32"

In case of using (N8104-112/119/120/121/122/125/126)

"\009\win\winnt\dotnet\ma21\pro1000\win32"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

In case of using (N8104-123A)

Please refer to the installation manual provided with the board.

Installation of the Optional Network Board Driver

1. Start Device Manager.
2. Click [Network adapters] and double-click [(Network Adapter Name)].

   [(Network Adapter Name) Properties] appears.

   NOTE: [(Intel(R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-111)], specify
   [\009\win\winnt\dotnet\ma21\pro100\win32].

   Then click [Next].

   When using [(N8104-112/119/120/121/122/125/126)], specify
   [\009\win\winnt\dotnet\ma21\pro1000\win32].

   Then click [Next].
7. Click [Finish].

Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the throughput by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

IMPORTANT:

- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing(ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.

Setup Teaming

IMPORTANT:

- AFT/ALB setting must be done after System Update completed.
- N8104-120/121/122/125/126 does not support SFT.
- Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.

   Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].
6. Select a team type ([Adapter Fault Tolerance]/[Adaptive Load Balancing]).

   Click [Next].
7. Click [Finish].
8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team. Click [Settings] tab and click [Modify Team] button.

9. Refer to the following procedure to set the team member adapter priority status.
   - Set Primary
     Point the adapter and click [Set Primary] button.
   - Set Secondary
     Point the adapter and click [Set Secondary] button.

   NOTE: Adapter priority config can be confirmed by the following procedure:
   1. Click [TEAM: "Team name"] from [Device manager] → [Network adapters].
   2. Click [Settings] and confirm Adapters in team list.

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.
    Confirm the result in [Test results]
11. Reboot the system.

Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter in not existing in [Network adapters] tree and reboot the system.

Setting WOL

Refer to the following procedure to enable WOL.

When PROSet is not installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Allow the computer to turn off this device to save power"	ON	ON
"Allow this device to bring the computer out of standby"	OFF	ON

4. Click [Advanced] tab and point to [Enable PME].
5. Set the "Enable" in [Value].
6. Click [OK].
7. Reboot the system.

When PROSet is installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Wake On Directed Packet"	ON	ON
"Wake On Magic Packet"	ON	ON
"Wake on Magic Packet from power off state"	OFF	ON

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will be maintained until manually resetting are executed.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.

4. Click [OK].
5. Reboot the system.

Graphics Accelerator Driver

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.
Standard graphics accelerator drivers will be installed automatically.

Please refer to "Graphics Accelerator Driver" that exists in Appendix F-24 when you want to reinstall the driver individually.

Installing SCSI Controller Driver (N8103-75/95/107)

If you use the SCSI Controller N8103-75/95/107, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SCSI Controller driver will be installed automatically.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SAS Controller driver will be installed automatically.

Installing RAID Controller Driver (N8103-115)

The installation procedure depends on your environment.

Follow steps below appropriate to your environment.

● If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is used:

You do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

● If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is not used:

Install the driver by the following procedures.

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools]→[Computer Management].
2. Double-click the RAID Controller which Device Manager lists as Other device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "No, not this time" and click [Next].
5. Select "Install from a list or specific location [Advanced]" and click [Next].
6. Select "Don't search. I will choose the driver to install" and click [Next].
7. Select "SCSI and RAID controller" and click [Next].
8. Click [Have Disk..].
9. Insert "NEC EXPRESSBUILDER DVD" into the optical disk drive, enter "<drive letter>:\009\win\winnt\oemfd\dotnet\fd1" into "copy manufacturer's file from:" and click [OK].
10. Specify the following driver and click [Next].
    - [LSI Logic MegaRAID SAS 8880EM2 RAID Controller]

The installation of the driver is completed.

Restart the system.

The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

> **IMPORTANT:** However, the Microsoft operating system products which support /PAE switch option are limited.
>
> Refer to the following article in Microsoft Knowledge Base to check the supported products.
>
> Microsoft Knowledge Base - Article ID: 291988
> "A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

In Windows Server 2003 system, the PAE option can be set by editing boot.ini.

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].
   [System Properties] dialog box will be shown.
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

```
<Example of Boot.ini file>
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003 " /fastdetect
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003, PAE" /fastdetect
/PAE
C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console" /cmdcons
```

This is the end of editing Boot.ini file.

> **NOTE:** If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

Setting for Solving Problems

Setup your computer in advance so that it can recover from any trouble precisely and as soon as possible when it should occur.

For more information, refer to Page 5-58.

SETTING FOR SOLVING PROBLEMS

Setup the following issue in advance so that your computer can recover from any trouble precisely and as soon as possible when it should occur.

Memory Dump (Debug Information) - Windows Server 2008 -

This section describes the procedures for collecting memory dump (debug information) in the server.

IMPORTANT: Cautions for the Memory Dump

- The staff of maintenance service representative is in charge of collecting memory dump. Customers need only to specify the memory dump.
- If any trouble occur after specifying the process below, the message to inform that the system is in short of virtual memory may appear, but continue to start the system. If you restart the system in such case, memory dump may not be stored correctly.

Follow the procedure below to specify.

1. Select [Control Panel] and click [System].

   The [System] dialog box appears.

2. Click [Advanced system settings].

   The [System Properties] dialog box appears.

3. Select [Advanced] tab.

   Click [Settings] on the [Startup and Recovery] group box.

4. Modify [Dump file:] in the [Write debugging information] group box.

   e.g. Write the debug information in D drive with the file name "MEMORY.DMP".

   D:\MEMORY.DMP

IMPORTANT:

Windows Server 2008 64-bit (x64) Edition

- To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 300MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

Windows Server 2008 32-bit (x86) Edition

- To specify "Complete Memory Dump" to write the debug information is recommended. If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 300MB"(In case the memory capacity is more than 2GB, a free area of "2048+300MB" or more).
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

5. Click [Settings] on the [Performance] group box.

   The [Performance Options] window appears.

6. Click [Advanced] tab on the [Performance Options] window.

7. Click [Change] on the [Virtual memory] group box.

8. Uncheck the [Automatically manage paging file size for all drives] box, and check [Custom size].

9. On the [Paging file size for each drive] box, specify as follows:

– A value larger than the recommended size shown in [Total paging file size for all drives] for [Initial size]

– A value larger than the [Initial size] for [Maximum size]

Then click [Set].

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- For more information on "Recommended" value, see "About the System Partition Size" described earlier.
- In case the memory is expanded, re-specify the paging file to suit the new memory size.

10. Click [OK].

The message to restart the system may appear according to the modified specification.

In such case, follow the message to restart the system.

Memory Dump (Debug Information) - Windows Server 2003 -

This section describes the procedures for collecting memory dump (debug information) in the server.

IMPORTANT: Cautions for the Memory Dump

- The staff of maintenance service representative is in charge of collecting memory dump. Customers need only to specify the memory dump.
- If any trouble occur after specifying the process below, the message to inform that the system is in short of virtual memory may appear, but continue to start the system. If you restart the system in such case, memory dump may not be stored correctly.

Follow the procedure below to specify.

1. Select [Control Panel] and click [System].

   The [System Properties] dialog box appears.

2. Select [Advanced] tab.
3. Click [Settings] on the [Startup and Recovery] group box.

IMPORTANT:

Windows Server 2003 x64 Editions

- To specify "Complete Memory Dump" to write the debug information is recommended.
  If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 1MB".
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

Windows Server 2003

- To specify "Complete Memory Dump" to write the debug information is recommended.
  If the mounted memory size is larger than 2GB, "Complete Memory Dump" cannot be specified so that specify "Kernel Memory Dump" instead.
- Specify the drive where there is a free area more than the size of "the memory capacity mounted on Express server + 12MB"(In case the memory capacity is more than 2GB, a free area of "2048+12MB" or more).
- In case the mounted memory size exceeds 2GB due to the added memory, change the write debugging information to [Kernel Memory Dump] before adding memory. The size of debugging information (memory dump) to be taken also changes due to adding memory. Verify the size of the empty space in the debugging information (memory dump) write destination drive.

4. Specify "Complete memory dump" and modify [Dump file:] in the [Write debugging information] group box.

   e.g. Write the debug information in D drive write the file name "MEMORY.DMP".

   D:\MEMORY.DMP

5. Click [Settings] on the [Performance] group box.

   The [Performance Options] window appears.

6. Click [Advanced] tab on the [Performance Options] window.

7. Click [Change] on the [Virtual memory] group box.

8. Modify [Initial Size] in the [Paging file size for selected drive] box to the value larger than the value of [Recommended] in the [Total paging file size for all drives], and click [Set].

   IMPORTANT:

   - The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
     Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
   - For more information on "Recommended" value, see "About the System Partition Size" described earlier.
   - In case the memory is expanded, re-specify the paging file to suit the new memory size.

9. Click [OK].

   The message to restart the system may appear according to the modified specification. In such case, follow the message to restart the system.

How to Create a User-mode Process Dump File

When the system is Windows Server 2008

"User-mode Process Dump" is the file that records information when any application error occurs.

When any application error occurs, do not close the pop-up window that notifies the error, and then collect a dump using following process.

1. Right-click a blank part of the taskbar and click [Task Manager], or press Ctrl + Shift + Esc to start [Task Manager].
2. Click [Processes] tab.
3. Right-click on process name that you want to collect dump, and then click [Create Dump File].
4. The dump file is stored in following directory.

   C:\Users\<User Name>\AppData\Local\Temp

   NOTE: The folder may be treated as hidden folder. If the folder does not appear, run Explorer and select [Tools] - [Folder Options...] - [View], and check to [Show hidden files and folders].

   When the User-mode Process Dump is created, pick up the file from the directory described in Step 4.

   Refer to Knowledge Base of Microsoft web-site for more information about the User-mode Process Dump file collection.

   "How to create a user-mode process dump file in Windows Server 2008"

   http://support.microsoft.com/kb/949180/en-us

   NOTE: For Windows Server 2008, Dr. Watson is replaced by [Problem Reports and Solutions], therefore, you can not collect the Crash Dump file by existing Dr. Watson.

   The above process provides you the information same level as the Crash Dump file.

When the system is Windows Server 2003 (Dr.Watson)

Dr. Watson is a debugger for application errors. If any application error is detected, Dr. Watson diagnoses the server and logs diagnostic information (log). Follow the procedure below and specify Dr. Watson to collect diagnostic information.

1. Click [Run] on Start menu.
2. Type "drwtsn32.exe" in the [Open] box, and click [OK].

   The [Dr. Watson for Windows] dialog box appears.
3. Specify the location to store the diagnostic information in the [Log File Path] box.

   The diagnostic information will be stored with the file name "DRWTSN32.LOG".

   NOTE: You can not specify network pass. Specify the pass on local computer.
4. Specify the location of crash dump file in the [Crash Dump] box.

   NOTE: "Crash Dump File" is a binary file that can be read with Windows Debugger.
5. Check the following check box on the [Options] box.

   ☐ Dump Symbol Table
   ☐ Dump All Thread Contexts
   ☐ Append TO Existing Log File
   ☐ Create Crash Dump File

   For more information on each function above, refer to Online Help.
6. Click [OK].

Network Monitor

Using Network Monitor helps you to investigate and manage with network trouble.

Network Monitor Setup (Windows Server 2008)

Microsoft Network Monitor allows you to examine and troubleshoot network problems.

> **NOTE:** Windows Server 2008 does not provide Network Monitor. To use Network Monitor on Windows Server 2008, install Network Monitor by following the steps below.

1. Download Microsoft Network Monitor from the following web site:
   http://support.microsoft.com/kb/955998/en-us
2. Run the downloaded file to start the installer.

   Follow the on-screen instructions to install Network Monitor.

   > **NOTE:** If a Security Alert appears, click [Run]. Select [Complete] for a setup format.

3. Network Monitor is installed.

   > **NOTE:** To remove Network Monitor, go to [Programs and Features].

Network Trace Capture (Windows Server 2008)

1. On the Start menu, start Microsoft Network Monitor.
2. On [Start Page], select [Create a new capture tab...] or select [New] in the [File] menu, and click [Capture...].

   A new tab for capturing a network trace is created.
3. On the [Select Networks] window, select a network you want to capture a trace.
4. On the [Capture] menu, click [Start] to start capturing a network trace.
5. On the [Capture] menu, click [Stop] to stop capturing a network trace.
6. On the [File] menu, select [Save As...].

   The [Save As] window appears. Select [All captured frames] from [Frame selection], and enter the names of a folder and a file.

   > **NOTE:** The default folder name is:
   > C:\Users\<User name>\Documents\Network Monitor 3\Captures

7. Click **Save** to create the file in the folder selected in step 6.

Network Monitor (Windows Server 2003)

To use Network Monitor, you need to restart the system after the installation has completed, so we recommend to install Network Monitor before any network trouble may occur.

1. Point to [Settings] from Start menu and click [Control Panel].

   The [Control Panel] dialog box appears.

2. Double-click [Add or Remove Programs].

   The [Add or Remove Programs] dialog box appears.

3. Click [Add/Remove Windows Component].

   The [Windows Components Wizard] dialog box appears.

4. Click [Management and Monitoring Tools] and then click [Details].

   The [Management and Monitoring Tools] dialog appears.

5. Click to select the [Network Monitor Tools] check box, and then click [OK].

6. The [Windows Components Wizard] dialog box appears again, so click [Next].

7. If the setup asks to install the disk, insert the OS CD-ROM into optical disk drive and click [OK].

8. Click [Finish] in the [Windows Component Wizard] dialog box.

9. Close the [Add or Remove Programs] dialog box.

10. Close the [Control Panel] dialog box.

To start Network Monitor, point to [Program] → [Administrative Tools] and click [Network Monitor]. For information on how to operate Network Monitor, refer to Online Help.

Re-installing the Operation System if Multiple Logical Drives Exist

Before Re-installing the Operation System

Be sure to make backup copies before re-installing the operation system just in case.

Re-installing the Operation System

1. Start the clean installation following the procedure described in this manual.
2. Specify the partition in which you want to install the operating system when the following message appears:

   The following list shows the existing partitions and unpartitioned space on this computer.

   Use the UP and DOWN ARROW keys to select an item in the list.

   * Cannot modify the drive letter of your system or boot volume. Confirm the proper drive letter is assigned and then, continue the setup.
3. Continue the clean installation again following the procedure described in this manual.
4. The drive letter of the re-installed system may differ from the one of the previous system. If you need to modify the drive letter, modify it according to the "Procedure for Modifying the Drive Letter".

Procedure for Modifying the Drive Letter

Be careful that the drive letter of the system or boot volume cannot modify with the following procedure.

1. Click Start menu, right-click [My Computer], and specify [Manage] to start [Computer Management].
2. Specify the [Disk Management] in the left side of the window.
3. Right-click the volume you want to modify the drive letter and specify the [Change Drive Letter and Path...].
4. Click [Yes].
5. Choose the [Assign a drive letter] and specify the drive letter you want to assign.
6. Click [OK].
7. If the following message appears, click [Yes].

> Changing the drive letter of a volume may cause programs to no longer run. Are you sure you want to change this drive letter?

8. Close the [Computer Management].

INSTALLING MAINTENANCE UTILITIES

Various maintenance utilities are contained in your NEC EXPRESSBUILDER DVD. See Chapter 6 for installing the utilities to your server or management workstations.

UPDATING THE SYSTEM

> **IMPORTANT:** If you install Windows Server 2003 CD-ROM which contains Service Pack 2 to your system, you do not have to apply Service Pack 2 again.

"Updating the System" is executed by Express Setup automatically.

Execute "Updating the System" in following cases.

- Modified system configuration.
- Recovered the system using recovery process.

See "Updating the System" section in Appendix D for detail of update process.

MAKING BACKUP COPIES OF SYSTEM INFORMATION

The system information includes the current BIOS settings and any specific information for the server.

Save the information after completing the system setup.

Without the backup data, you will not be able to recover the information.

You can save the information by the following process.

1. Insert the "NEC EXPRESSBUILDER" DVD into the optical disk drive and reboot the system.
2. Select [Tool menu (Normal mode)].
3. Select [English].
4. Select [Maintenance Utility].
5. Select [System Information Management].
6. Insert a floppy disk into the floppy disk drive.
7. Select [Save].

Installing with the OEM-Disk for Mass Storage Device

This section explains how to setup with the OEM-Disk. You usually do not have to do as follows. If your system has any Mass storage devices, you have to set as follows depending on your system. The detailed information is provided by the manual of the Mass storage device.

Creating new RAID using RAID Controller

If you create new RAID using RAID Controller, create RAID by following procedure before installing Windows Server 2008.

If you do not need to create new RAID, this procedure is not required.

Case of creating RAID using [EXPRESSBUILDER].

1. Boot from the EXPRESSBUILDER DVD.
2. Select [Perform the Express setup] from the Top Menu, click [Next].
3. When [Load parameters] screen is displayed, if you do not need to load parameters, select [Do not load parameters] and click [Next].
4. Select [Install other Operating System] at [Select OS] steps, and then click [Next].
5. Select [Create a logical drive using the settings that follow] at [Enter RAID settings] steps.

   Confirm the parameters, modify if necessary, and then click [Next].
6. Save parameters at [Save parameters] steps.

   If you do not need to save parameters, select [Do not save parameters], and click [Next].
7. Click [Perform] at [Configuring RAID] steps.

   RAID configuration is started.
8. When [Exit EXPRESSBUILDER] screen is displayed, click [Perform] again.

   The system reboots.

   Reboot from EXPRESSBUILDER DVD, and then perform Express Setup referring to [Installing the Operating System with Express Setup].

> **NOTE:** When you start Express Setup, select [Skip the logical drive creation] at Step 4 [Enter RAID settings] screen.

Installation of Mass storage device not to be supported by Express Setup

If you would like to install or re-install the OS when the system has new mass storage device not to be supported by NEC EXPRESSBUILDER, you have to set as follows.

1. Read the manual supplied with the mass storage device before setting the server.
2. If the mass storage device is RAID Controller, configure the RAID System before running the NEC EXPRESSBUILDER.
3. Boot the system from NEC EXPRESSBUILDER DVD.
4. Select [Load the optional driver into the EXPRESSBUILDER] from the Top menu, click [Next].

   Setting the driver disk for the mass storage controller. Press the "Perform" button.

   NOTE: By choosing this option, you can load the driver provided by CD-ROM or floppy disk to proceed with the Express Setup.

5. Perform Express Setup with the following settings.

   (a) When "Enter RAID settings" appears, check "Skip the logical drive creation".

   (b) Select "Apply OEM-Disk for Mass storage device".

6. Copy the driver for the mass storage device in the Express Setup.

   Insert the floppy disk attached the mass storage device into the floppy disk drive.

   Continue the Express Setup, referring to messages displayed on the display.

(This page is intentionally left blank.)

Chapter 6

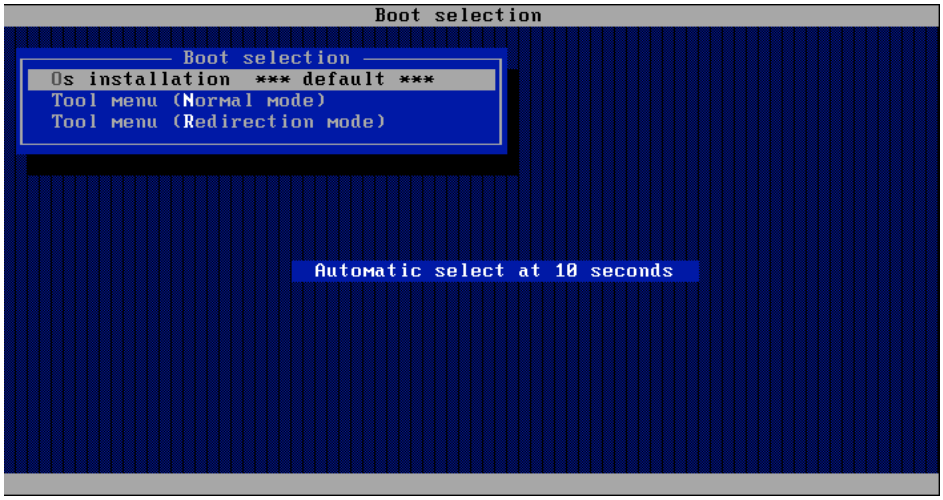
Installing and Using Utilities

This section describes how to use the NEC EXPRESSBUILDER DVD that comes with your server and to install the utilities stored on the NEC EXPRESSBUILDER.

NEC EXPRESSBUILDER

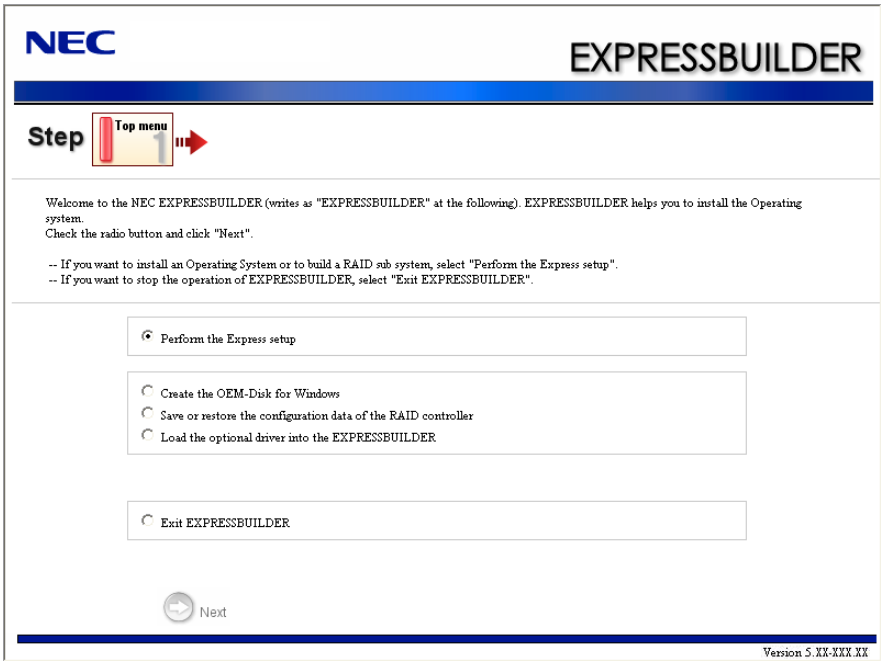
The NEC EXPRESSBUILDER (referred to as "EXPRESSBUILDER" hereinafter) helps you install the Operating system/the Management software or use the maintenance utilities.

When you insert the EXPRESSBUILDER disk into the DVD drive and reboot the system, the following menu appears.



■ Os installation

If you select this item, the Top menu appears.


NEC
EXPRESSBUILDER
Step
Top menu
1
Welcome to the NEC EXPRESSBUILDER (writes as "EXPRESSBUILDER" at the following). EXPRESSBUILDER helps you to install the Operating system.
Check the radio button and click "Next".
-- If you want to install an Operating System or to build a RAID sub system, select "Perform the Express setup".
-- If you want to stop the operation of EXPRESSBUILDER, select "Exit EXPRESSBUILDER".
Perform the Express setup
Create the OEM-Disk for Windows
Save or restore the configuration data of the RAID controller
Load the optional driver into the EXPRESSBUILDER
Exit EXPRESSBUILDER
Next
Version 5.XX-XXX.XX

■ **IMPORTANT:** This tool is Configuration Tool that built on Windows PE 2.0 technology.
Pay attention to the automatic reboot that occurs after 72 hours from start.

You can use the Express Setup (see Chapter 5) or the following functions from this menu.

– Create the OEM-Disk

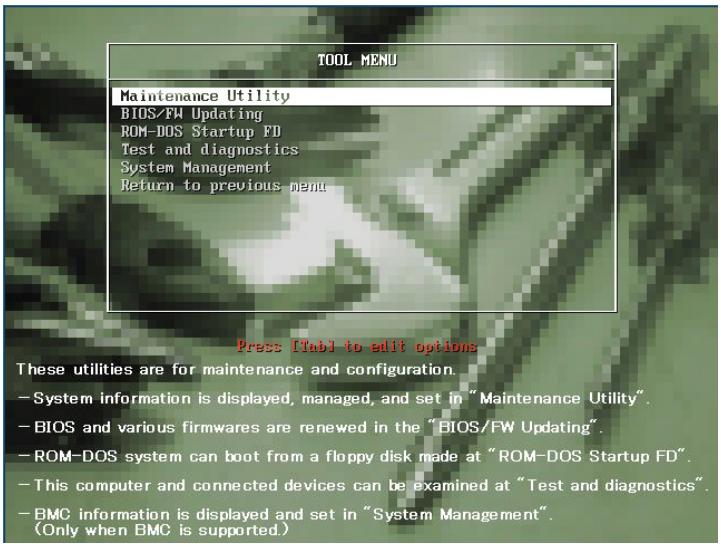
You can create the Windows OEM-Disk to use at the Windows manual setup.

– Load the driver

This function is not usually used. If you add the new device to the server, this function may use. (See Chapter 5.)

■ Tool menu (Normal mode)

If you select this item, the Tool menu appears.


TOOL MENU
Maintenance Utility
BIOS/FW Updating
ROM-DOS Startup FD
Test and diagnostics
System Management
Return to previous menu
Press [Tab] to edit options
These utilities are for maintenance and configuration.
- System information is displayed, managed, and set in "Maintenance Utility".
- BIOS and various firmwares are renewed in the "BIOS/FW Updating".
- ROM-DOS system can boot from a floppy disk made at "ROM-DOS Startup FD".
- This computer and connected devices can be examined at "Test and diagnostics".
- BMC information is displayed and set in "System Management".
(Only when BMC is supported.)

You can use the below functions for maintenance.

– Maintenance Utility
The Maintenance Utility is usually used by the service representative. (See Chapter 8.)

– BIOS/FW Updating
You can update the system BIOS by using the floppy disk (prepare a 3.5" floppy disk).

– ROM-DOS Startup FD
The ROM-DOS Startup FD is used for starting the ROM-DOS system.

– Test and diagnostics
This function allows you to diagnose this computer. (See Chapter 7.)

– System Management
The parameters of BMC (Baseboard Management Controller) are set for remote control and alert. This menu's function is the same as the "System Management" of the "Maintenance Utility".

■ Tool menu (Redirection mode)

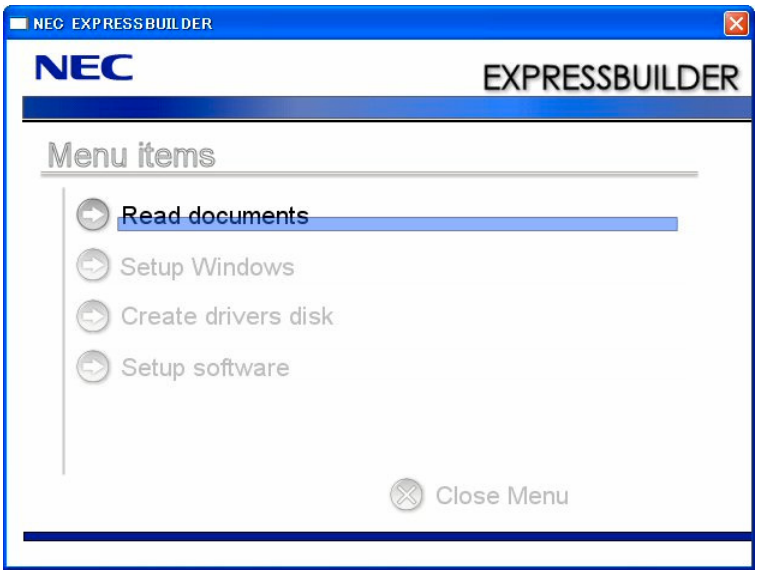
If you want to operate this computer via the BIOS redirection (the console-less function), select this item.

NOTE: If you operate this computer via the Remote KVM function, select the "Tool menu (Normal mode)".

The menu's functions are the same as the "Tool menu (Normal mode)".

Autorun Menu

When the EXPRESSBUILDER disk is inserted into the DVD drive, Windows automatically launches the menu as shown below.



This menu is used to,

- Read the User's Guide or the other documents,
- Update the server system (Windows drivers), and
- Install the management software.

NOTES:

- This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).
- Some documents are provided in PDF format. Use the Adobe Reader to view or print these documents.

If the menu does not appear, select "My computer" by using the Explorer, and double-click the icon of the DVD drive that contains the EXPRESSBUILDER DVD.

Some menu items are grayed-out when the logon user does not have the authority of the administrator or the menu item is not available for your system.

To use the menu,

- Click on the menu items, or
- Click the right mouse button on the menu window.

PARAMETER FILE CREATOR

"Parameter File Creator" is a tool to create [Parameter file] that is used for configuring the server with the Express Setup (see Chapter 5 for details).

If you use the Parameter file created by the Express Setup and Parameter File Creator to operate the setup, you can setup from the installation of OS to several utilities automatically except for a few key input to confirm the specification. Also, you can install the system with the same specification as before when re-installing the system. We recommend you to create [Parameter file] to setup the servers from NEC EXPRESSBUILDER.

When using a floppy disk, a USB floppy disk drive is required.

IMPORTANT: You can not create [Parameter file] for Microsoft Windows Server 2003 x64 Editions.

NOTE: You can install Windows Server 2003 without [Parameter file]. Also, you can modify/newly create [Parameter file] during the setup with NEC EXPRESSBUILDER.

Parameter File

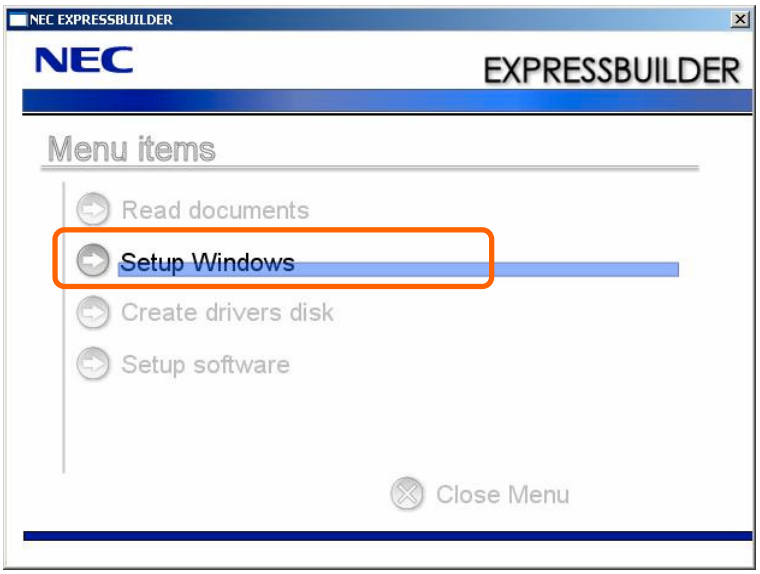
This section describes about specifying setup information that is necessary for OS installation and creating [Parameter file].

Follow the procedure below.

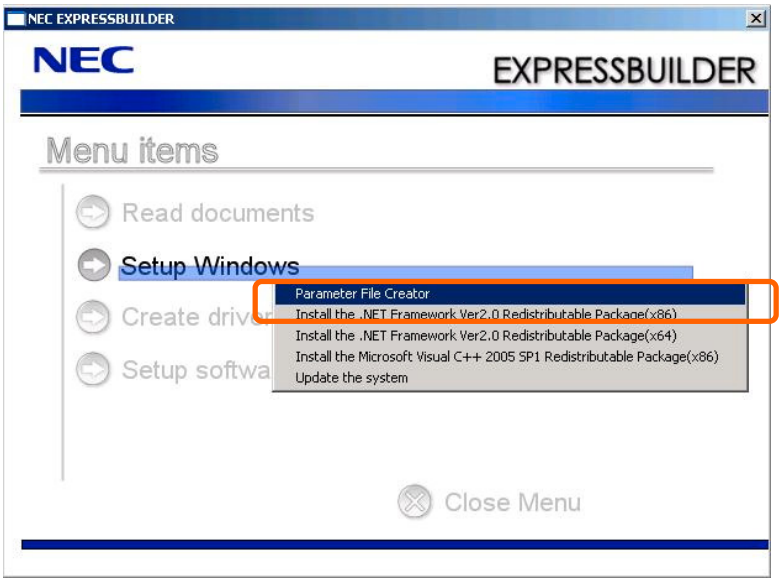
> **IMPORTANT:** Do not remove NEC EXPRESSBUILDER DVD from drive during a parameter file creation.

1. Start the OS.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   The menu will appear.
3. Right-click on the screen or left-click [Setup Windows]. The menu will appear.



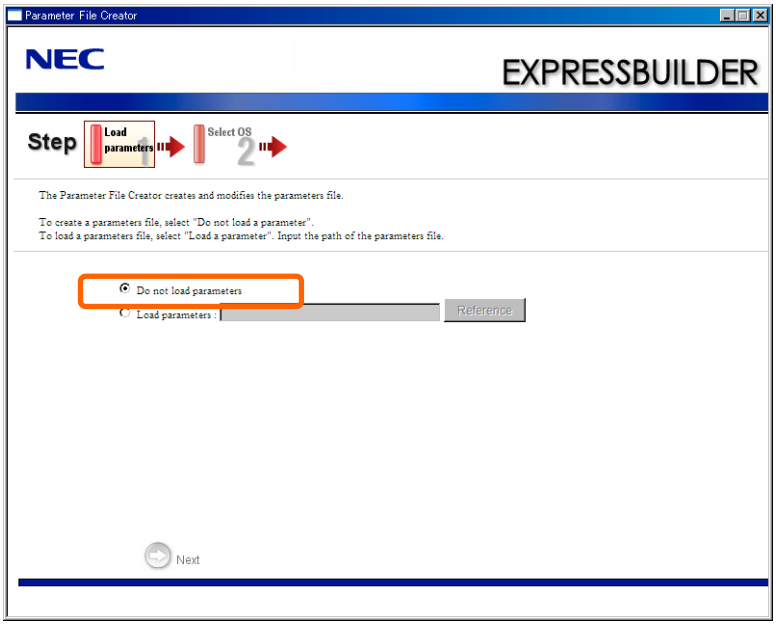
4. Click [Parameter File Creator].



Parameter File Creator will appear.

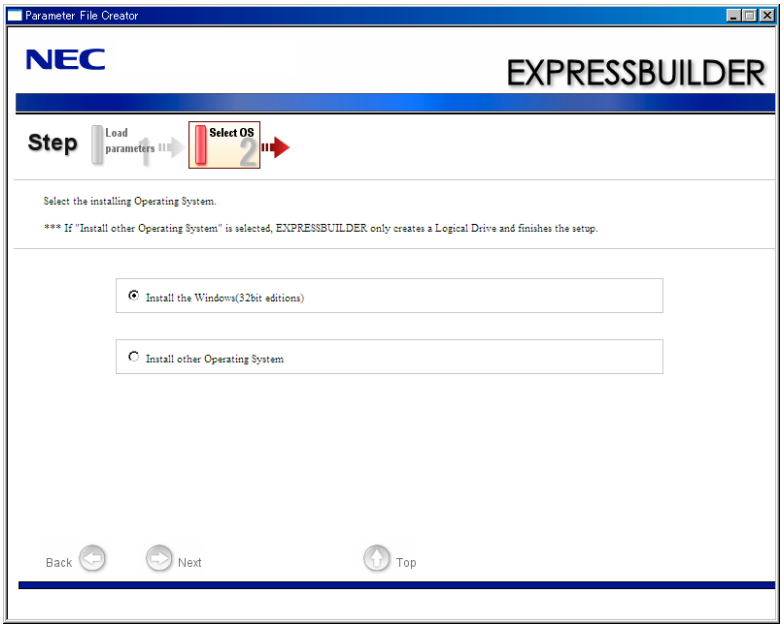
5. [Load Parameters] step is displayed.

Select [Do not load parameters] from the menu, click [Next].


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters
Select OS
The Parameter File Creator creates and modifies the parameters file.
To create a parameters file, select "Do not load a parameter".
To load a parameters file, select "Load a parameter". Input the path of the parameters file.
Do not load parameters
Load parameters :
Reference
Next

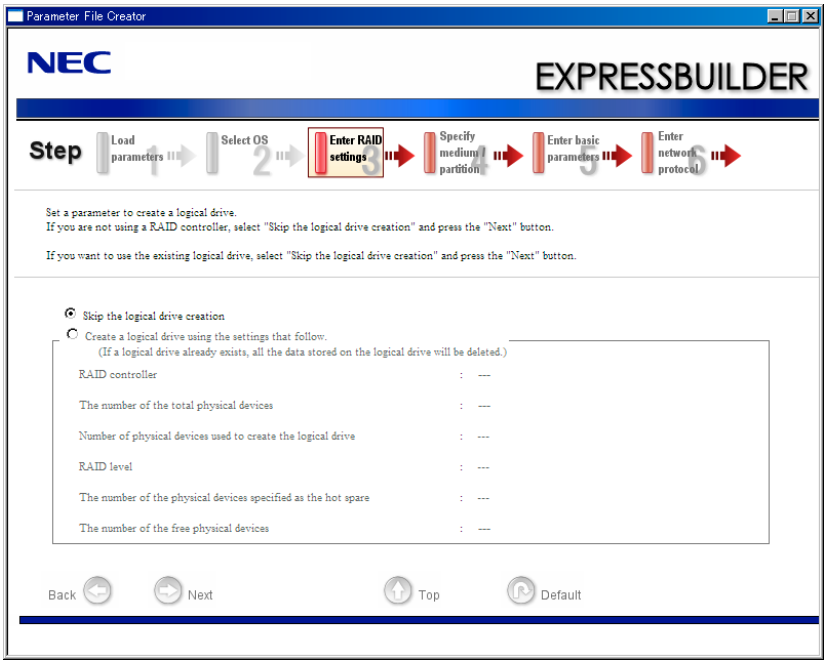
6. Select the installing Operating System.

Select [Install the Windows (32bit editions)] from the menu, click [Next].



7. Enter the setting of a logical drive.

[Enter RAID setting] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Enter network protocol
Set a parameter to create a logical drive.
If you are not using a RAID controller, select "Skip the logical drive creation" and press the "Next" button.
If you want to use the existing logical drive, select "Skip the logical drive creation" and press the "Next" button.
Skip the logical drive creation
Create a logical drive using the settings that follow.
(If a logical drive already exists, all the data stored on the logical drive will be deleted.)
RAID controller : ---
The number of the total physical devices : ---
Number of physical devices used to create the logical drive : ---
RAID level : ---
The number of the physical devices specified as the hot spare : ---
The number of the free physical devices : ---
Back
Next
Top
Default

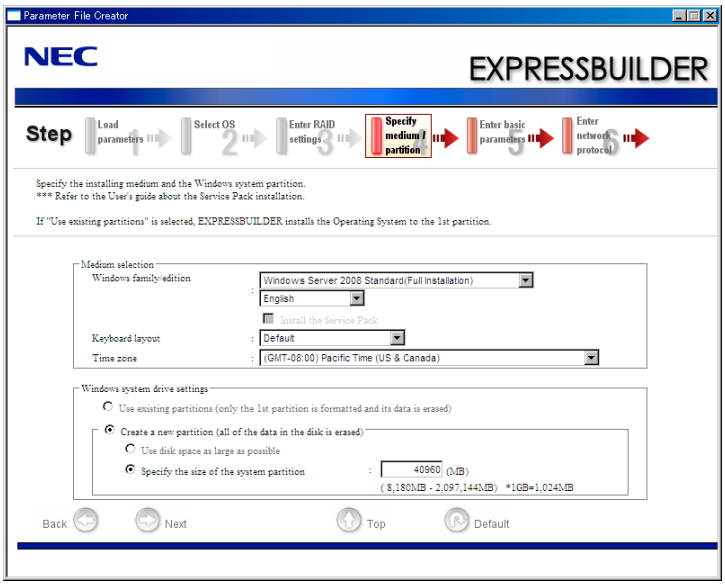
IMPORTANT: At "The number of the total physical devices", Parameter File Creator displays upper limit that the RAID Controller can support.
The total of "The number of physical devices used to create the logical drive" and "The number of the physical devices specified as the hot spare" must not exceed "The number of the total physical devices" which connected to the target system.

NOTE: You can use only the physical devices that have same model number to configure logical drive.

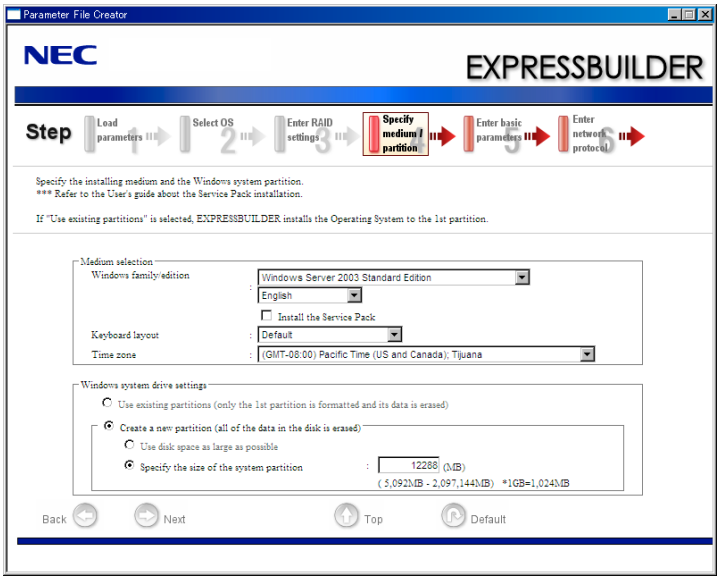
8. Specify the installing medium and the Windows system partition.

[Specify medium / Partition] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

[Windows Server 2008]


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Enter network protocol
Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.
If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.
Medium selection
Windows family/edition
Windows Server 2008 Standard(Full Installation)
English
Install the Service Pack
Keyboard layout
Default
Time zone
(GMT-08:00) Pacific Time (US & Canada)
Windows system drive settings
Use existing partitions (only the 1st partition is formatted and its data is erased)
Create a new partition (all of the data in the disk is erased)
Use disk space as large as possible
Specify the size of the system partition
40960 (MB)
(8,180MB - 2,097,144MB) *1GB=1,024MB
Back
Next
Top
Default

[Windows Server 2003]

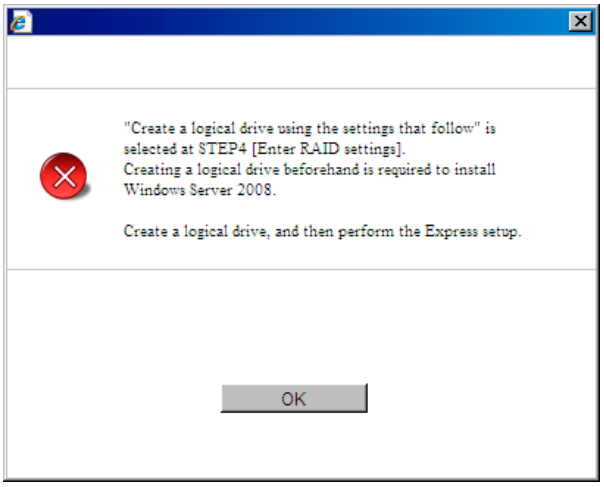

Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Enter network protocol
Specify the installing medium and the Windows system partition.
*** Refer to the User's guide about the Service Pack installation.
If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition.
Medium selection
Windows family/edition
Windows Server 2003 Standard Edition
English
Install the Service Pack
Keyboard layout
Default
Time zone
(GMT-08:00) Pacific Time (US and Canada); Tijuana
Windows system drive settings
Use existing partitions (only the 1st partition is formatted and its data is erased)
Create a new partition (all of the data in the disk is erased)
Use disk space as large as possible
Specify the size of the system partition
12288 (MB)
(5,092MB - 2,097,144MB) *1GB=1,024MB
Back
Next
Top
Default

IMPORTANT:

- If you install Windows Server 2003 R2, do not apply Service Pack by Express Setup. If you install Service Pack, apply Windows Server 2003 R2 DISC 2 after Express Setup completion, and then install Service Pack by "Updating the system".
- About partition size
  - Specify the partition size larger than required minimum size for OS installation.
  - Do not specify larger partition size than the capacity of connected hard disk drive.
  - You can not specify a logical drive larger than 2,097,144MB at RAID system.
- If you select "Create a new partition" at "Windows system drive settings", the contents of the hard disk will be all deleted.
- If "Use existing partitions" is selected, EXPRESSBUILDER installs the Operating System to the 1st partition (1st partition is deleted). The data in the other partition is kept if the system has two or more partitions. (See the figure below.)

First Partition Deleted	Second Partition Retained	Third Partition Retained

- You can not re-install the system with the existing partition that is upgraded to Dynamic Disk remained. Do not select "Use existing partitions" at "Windows system drive settings".
- When Windows Server 2008 (32bit editions) is selected after RAID is newly constructed at [Enter RAID settings] screen, the following message is displayed.

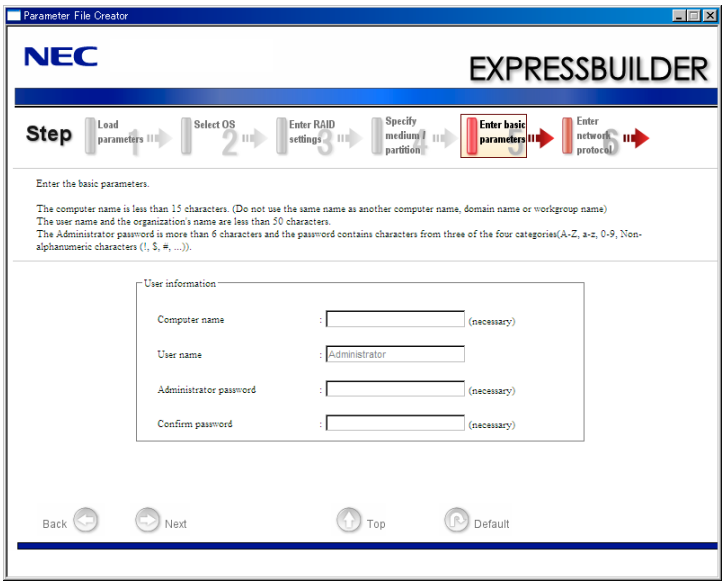

"Create a logical drive using the settings that follow" is selected at STEP4 [Enter RAID settings].
Creating a logical drive beforehand is required to install Windows Server 2008.
Create a logical drive, and then perform the Express setup.
OK

Please create RAID before you start Express Setup.

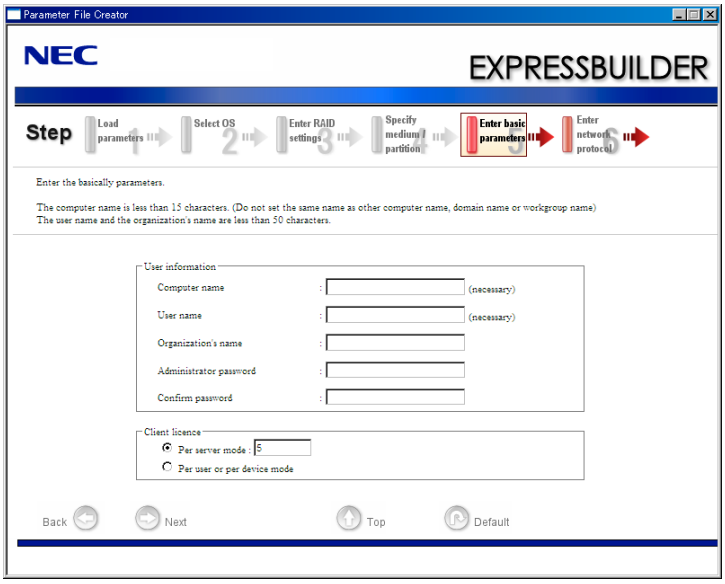
9. Enter the user information and client license mode.

[Enter basic parameters] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

[Windows Server 2008]


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Load parameters
Select OS
Enter RAID settings
Specify medium / partition
Enter basic parameters
Enter network protocol
Enter the basic parameters.
The computer name is less than 15 characters. (Do not use the same name as another computer name, domain name or workgroup name)
The user name and the organization's name are less than 50 characters.
The Administrator password is more than 6 characters and the password contains characters from three of the four categories(A-Z, a-z, 0-9, Non-alphanumeric characters (!, $, #, ...)).
User information
Computer name
(necessary)
User name
Administrator
Administrator password
(necessary)
Confirm password
(necessary)
Back
Next
Top
Default

[Windows Server 2003]

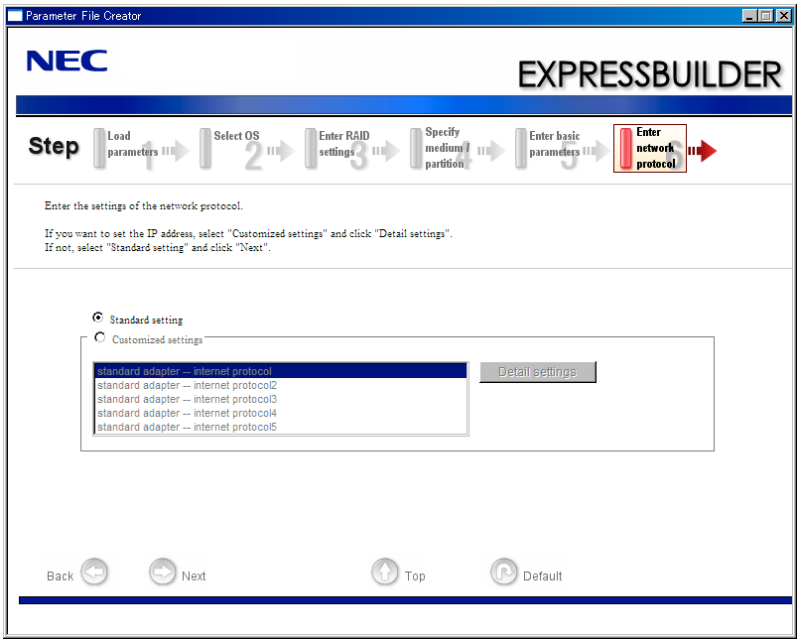


IMPORTANT: Computer name and User name are required parameters.

NOTE: Even if you do not input value into "Administrator password", "Confirm password", "●●●●●" is displayed.

10. Enter the setting of the network protocol.

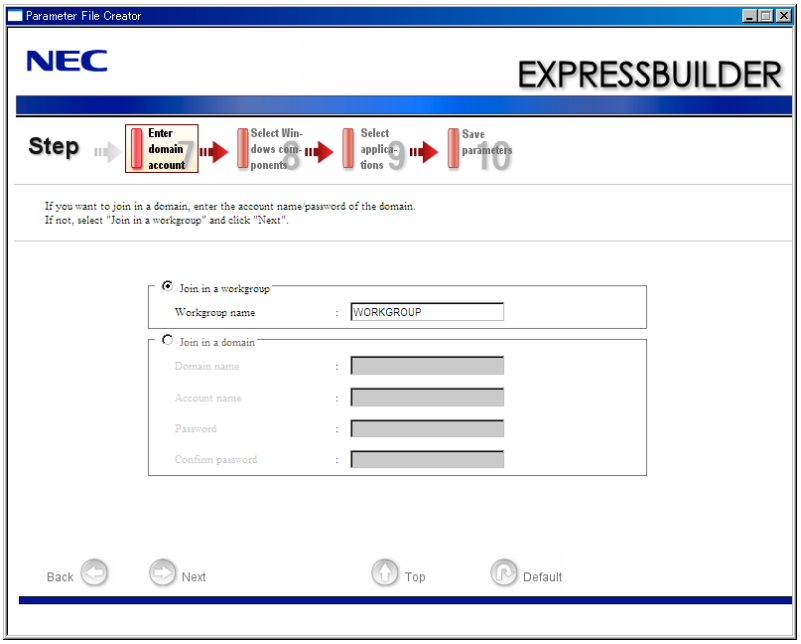
[Enter network protocol] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



NOTE: The order of entry in custom setting may differ from the numbering of LAN port.

11. Enter the domain or workgroup name to be used.

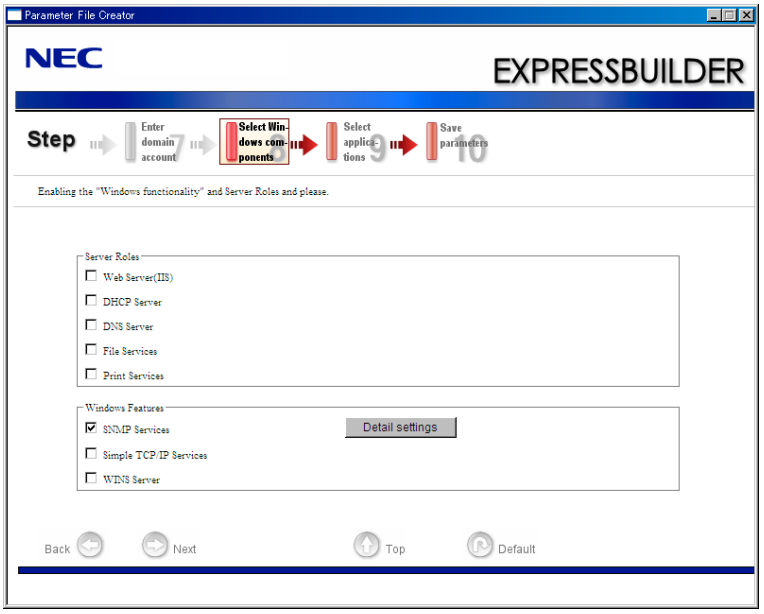
[Enter domain account] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].



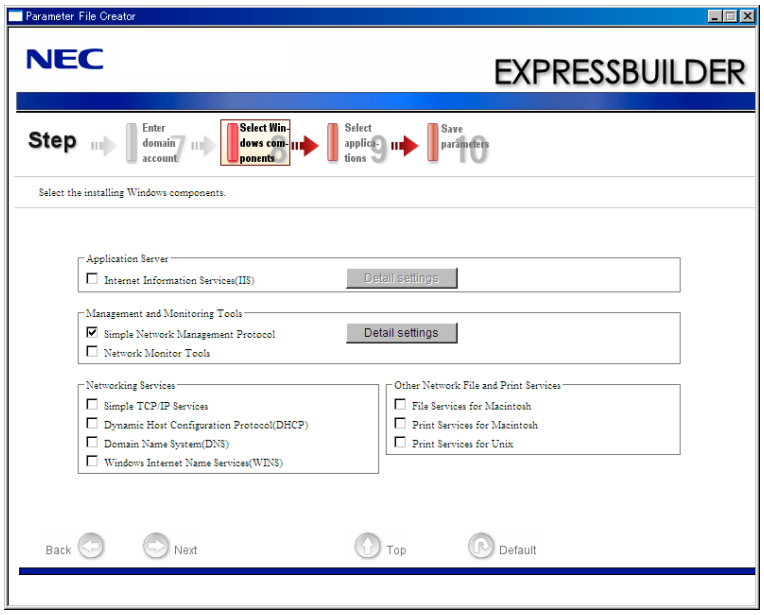
12. Select the installing components.

[Select Windows components] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next]

[Windows Server 2008]



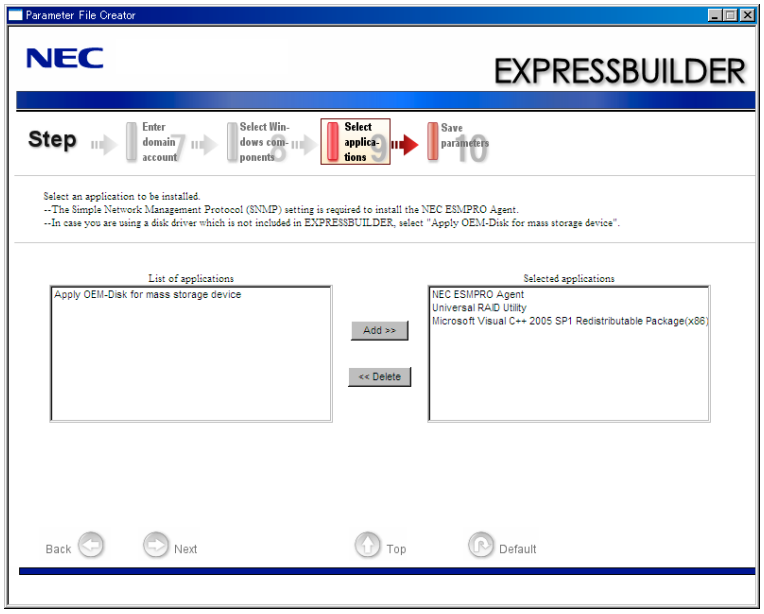
[Windows Server 2003]



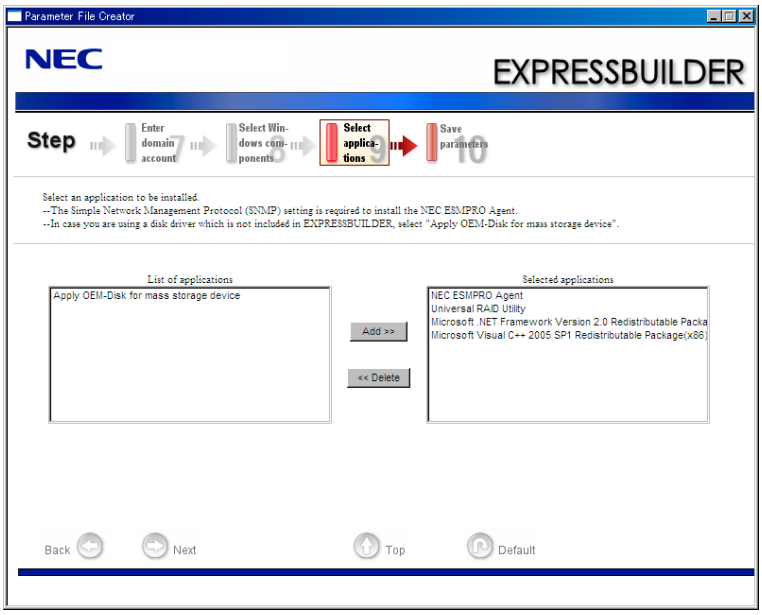
13. Select the installing applications.

[Select applications] steps are displayed. Confirm the parameters, modify if necessary, and then click [Next].

[Windows Server 2008]

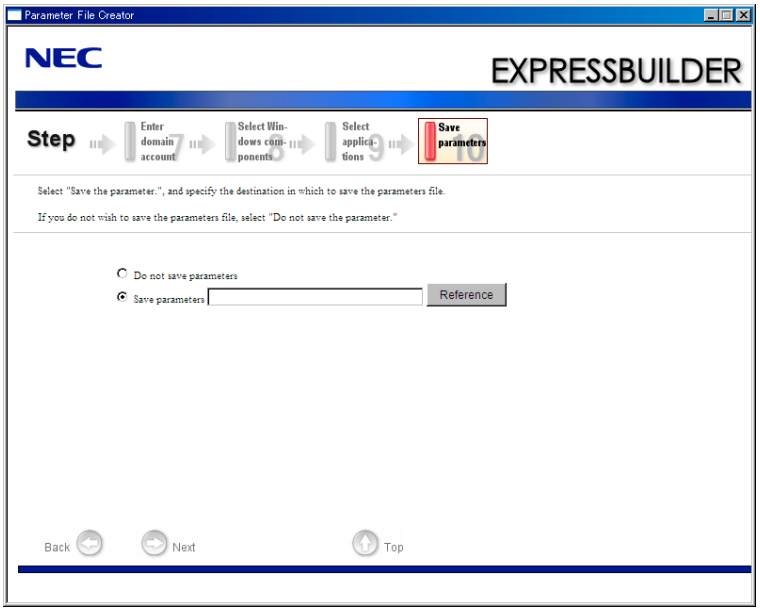


[Windows Server 2003]


Parameter File Creator
NEC
EXPRESSBUILDER
Step
Enter domain account
Select Windows components
Select applications
Save parameters
Select an application to be installed.
--The Simple Network Management Protocol (SNMP) setting is required to install the NEC ESMPRO Agent.
--In case you are using a disk driver which is not included in EXPRESSBUILDER, select "Apply OEM-Disk for mass storage device".
List of applications
Apply OEM-Disk for mass storage device
Add >>
<< Delete
Selected applications
NEC ESMPRO Agent
Universal RAID Utility
Microsoft .NET Framework Version 2.0 Redistributable Packa
Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)
Back
Next
Top
Default

14. Save the parameters.

[Save parameters] steps are displayed.

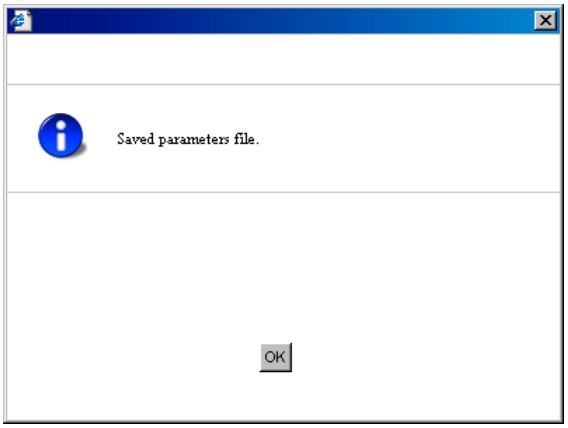


If you want to save the parameters, set the free formatted floppy disk.

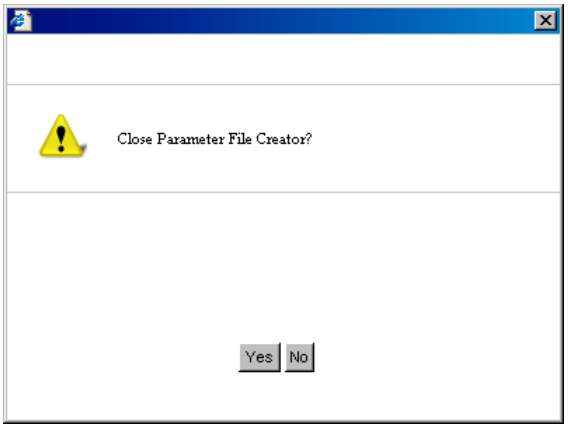
Select [Save parameters], enter the file path of the parameters files into the text box and click [Next].

If not, select [Do not save parameters].

15. Saved to a floppy disk.



Now [the floppy disk containing the parameters file] has been created.



Click [Yes] to exit Parameter File Creator.

NOTES:

- If you modify existing information file (parameter file), click "Load Parameters" at [Load Parameters] screen. Refer to help to modify information file.
- If you cancel operation on the way, click at the upper-right corner of the screen.

NEC ESMPRO

The NEC ESMPRO lets a system administrator manage remote servers across a network. NEC ESMPRO monitors server hardware and software configurations, failures, and performance. With log data collected by NEC ESMPRO, a system administrator can track long-term and short-term performance, monitor server usage, create graphs to record trends, and check server failure rates. The administrator can use the information collected to create more efficient data routing procedures and optimize server usage.

Functions and Features

NEC ESMPRO offers many functions and features for managing remote servers across a network. These features help the system administrator perform daily system operation, system extension, and transfer tasks. Some features of NEC ESMPRO Manager include:

- Hardware and software server configuration
  - Hardware resources mounted in servers, such as the CPU, memory, disks, RAID System, and LAN boards.
  - Software resources, such as operating system information and drivers running on each server.
- Server failures
  - On-screen real-time displays provide the system administrator with the failure type, location, cause, and suggested corrective action.
  - Failure data includes hardware failure information such as system board temperature, memory failure, crashes, and software failure information.
- Performance
  - NEC ESMPRO monitors server performance and displays server usage on the screen and displays information, such as the rate of CPU load, memory usage, disk usage, and LAN traffic. Usage threshold values can help the system administrator monitor and prevent server overloads.

For installation procedure and detailed explanations on NEC ESMPRO, refer to the online document in the NEC EXPREDSBUILDER DVD.

Universal RAID Utility

Universal RAID Utility is an application to manage or monitor the following RAID Controllers.

- Onboard RAID Controller (LSI Embededd MegaRAID)
- Internal RAID Controller (equivalent to N8103-116A)
- N8103-116A RAID Controller (128MB, RAID0/1)
- N8103-117A RAID Controller (128MB, RAID0/1/5/6/)
- N8103-118A RAID Controller (256 MB, RAID0/1/5/6)
- N8103-115 RAID Controller (512 MB, RAID0/1/5/6)

Before attempting to operate Universal RAID Utility, read the "Universal RAID Utility Ver2.0 User's Guide" included in NEC EXPRESSBUILDER DVD. The manual explains the installation procedure and notes on operating Universal RAID Utility.

Setup with Express Setup

You can install Universal RAID Utility with Express Setup contained in NEC EXPRESSBUILDER DVD. When you start the Express Setup, a dialog to specify an application appears. Select [Universal RAID Utility] on the dialog.

Manual Setup

Windows

You can start the setup program of Universal RAID Utility from [Autorun Menu].

Click [Setup Software] → [Universal RAID Utility] in [Autorun Menu].

You need to install the following software.

- Microsoft .NET Framework 2.0
- The Runtime component of the Microsoft Visual C++ 2005 SP1

You can install these software from [Autorun Menu] too.

Click [Setup Windows] → [Install the .NET Framework Ver 2.0 Redistributable Package(x86)] (If CPU architecture is x64, [Install the .NET Framework Ver2.0 Redistributable Package(x64)]) in [Autorun Menu] for the setup of Microsoft.NET Framework 2.0.

Click [Setup Windows] → [Install the Microsoft Visual C++ 2005 SP1 Redistributable Package(x86)] (Use the x86 package whatever the CPU architecture may be.) for the setup of the Runtime component of the Microsoft Visual C++ 2005 SP1.

Linux

You need to run the setup.sh in the install image of Universal RAID Utility.

There is the install image of Universal RAID Utility in the following directory of EXPRESSBUILDER.

/*BBB*/lnx/pp/uraidutl

The part of BBB is BBB of the medium number (5.AA-BBB.CC) of EXPRESSBUILDER.

Using Universal RAID Utility via Network

Universal RAID Utility doesn't have the function of management to computer installed RAID Controller via network. If you want to manage it via network, please use the function of remote console (ex. Remote Desktop of Windows).

Easy Configuration

You can not use the function of Easy Configuration to LSI Embedded MegaRAID.

Creating Logical Drive of RAID 6

You must use four or larger Physical Devices for creating the Logical Drive of RAID 6 by Universal RAID Utility. If you want to create the Logical Drive from three Physical Devices, you need to use WebBIOS.

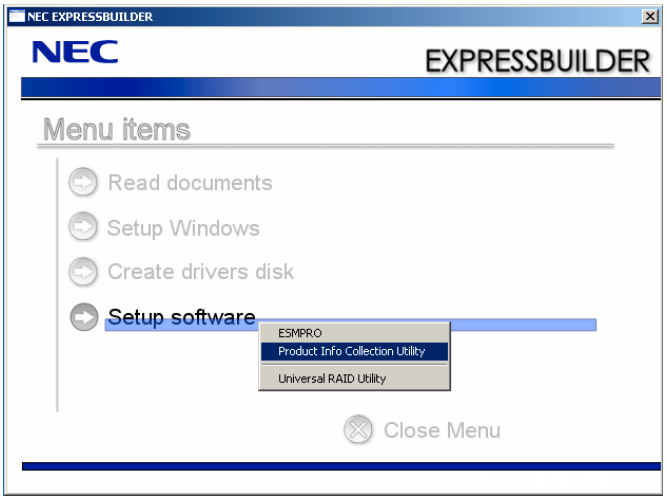
NEC PRODUCT INFO COLLECTION UTILITY

The NEC Product Info Collection Utility is software installed in this server.
Various information on the server can be collected at maintenance and the trouble, etc.
This utility can be installed from NEC EXPRESSBUILDER DVD.

Installation

The procedure when individually installing it is shown as follows.

1. Insert NEC EXPRESSBUILDER DVD in the optical disk drive after OS starts.
2. Click from the menu displayed with Auto-run in order of [Setup software] – [Product Info Collection Utility].
3. The installation of this utility is started. (It is installed in "System drive: \ezclct" folder.)



IMPORTANT:

- Please log-in the system in account with the administrator authority.
- 2.5GB or more free space is required for the installation drive.

Using Utility

Execute collect.exe in "System drive: \ezclct\stdclct" folder.

The log folder is made in the above-mentioned folder, and various information on this device is stored in the data compressed file (zip form).

Uninstallation

Execute ez_uninst.bat in "System drive: \ezclct" folder.

(This page is intentionally left blank.)

Chapter 7

Maintenance

This chapter describes the daily maintenance of the server and precautions when relocating or storing the server.

MAKING BACKUP COPIES

NEC recommends you make backup copies of your valuable data stored in hard disk drives of the server on a regular basis. For backup storage devices suitable for the server and backup tools, consult with your service representative.

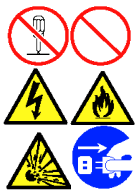
When you have changed the hardware configuration or BIOS configuration, select "System Information Management" and then "Save" of the Off-line Maintenance Utility to make a backup copy of the system information.

Also make a backup copy of the RAID System configuration data if your system is in the RAID System configuration. When your hard disk drives have been auto-rebuilt due to a failure, it is recommended to make a backup copy of the configuration data. To make a backup copy of the configuration data, use the configuration utility that is resident in the FLASH memory on the optional RAID Controller. Refer to the manual supplied with the board.

CLEANING

Clean the server on a regular basis to keep the server in a good shape.

⚠ WARNING



Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-12 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

- Avoid installation in extreme temperature conditions.
- Make sure to complete board installation.

Cleaning the Server

For daily cleaning, wipe the external surfaces of the server with a dry soft cloth. Follow the procedure below if stains remain on the surfaces:

IMPORTANT:

- To avoid altering the material and color of the server, do not use volatile solvents such as thinner and benzene to clean the server.
- The power receptacle, the cables, the connectors on the rear panel of server, and the inside of the server must be kept dry. Do not moisten them with water.

1. Make sure that the server is off-powered (the POWER LED goes off).
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in Step 4.
6. Soak a soft cloth in water, squeeze it firmly, wipe the server with it once again.
7. Wipe the server with a dry cloth.
8. Wipe off dust from the fan exhaust opening on the rear of the server with a dry cloth.

Cleaning the Interior

One of the most important items in a good maintenance program is regular and thorough cleaning of the interior of the server, especially around the mother board.

Dust buildup inside the server can lead to several problems. As dust acts as a thermal insulator, a buildup can prevent proper system cooling. Excessive heat will shorten the life of server components. Also, dust may contain conductive or corrosive materials that can cause short circuits or corrosion of electrical contacts.

How often you should clean the interior of the server depends on the environment in which it is located. For most office environments, you probably should clean the server every 12 months. For more severe environments, clean the interior every 6 months.

Cleaning the interior of the server entails powering off the server and removing the left side cover. You will need a small vacuum cleaner (with plastic tipped nozzle and electrostatic protection), computer grade canned air, and a small brush for cleaning the interior.

Follow the procedure below to clean the interior of the server.

⚠ WARNING

Unplug all power cords.

Unplug all power cords before performing any maintenance. Voltage is present inside the server and display unit even after the power is turned off. All voltage is removed only when the power cord is unplugged.

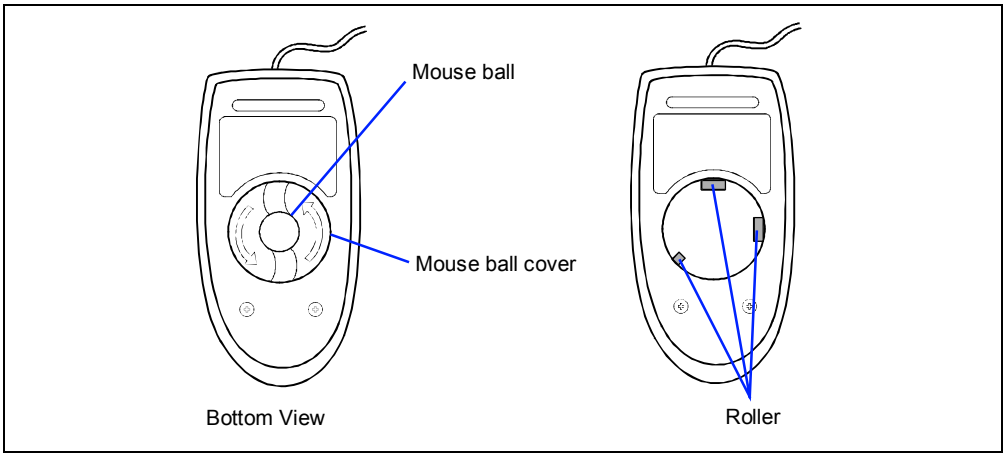
1. Turn off the server and unplug all power cables.
2. Remove the top cover. (See Chapter 9.)
3. Use a small brush to loosen any dust and debris on the mother board.
4. Use computer grade canned air to blow dust off components on the mother board.
5. Use a small vacuum cleaner with plastic tip to vacuum out dust and debris from the interior of the server.
6. Reinstall the covers. (See Chapter 9.)
7. Reconnect all power cables and turn on the server.

Cleaning the Keyboard/Mouse

Make sure that the server and peripheral devices are all off-powered (the POWER LED goes off), and then wipe the keyboard surface with a dry cloth.

The mouse operation depends on the degree of smoothness of the internal ball rotation. To keep the mouse ball clean, use the mouse in a place with little dust. Follow the steps below to clean the mouse regularly:

1. Prepare cold or lukewarm water, neutral detergent, alcohol, two dry soft clothes, and cotton swabs.
2. Make sure that the server is off-powered (the POWER LED goes off).
3. Turn the mouse upside down, and rotate the mouse ball cover counterclockwise to remove it.
4. Take out the ball from the mouse. Cover the bottom of the mouse with your hand, and turn your hand holding the mouse (the mouse is on your palm with the button upward). The mouse ball is released onto your palm.



5. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
6. Rub off stains on the mouse ball. Softly wipe the mouse ball with the cloth prepared in Step 5.
7. Wipe the mouse ball with a dry soft cloth.
8. Wipe three small rollers inside the mouse with a cotton swab soaked with alcohol. Wipe stains slowly and carefully by rotating rollers with the tip of the cotton swab.
9. Blow out any dust from the mouse. Protect your eyes from the dust.
10. Put the mouse ball back into the mouse.
11. Place the mouse ball cover, and rotate it clockwise until it is locked.

Cleaning Disc

A dusty disc or dust-accumulated tray causes the device to fail to read data correctly.

Follow the procedure below to clean the tray and disc regularly:

1. Make sure that the server is powered (the POWER LED is lit).
2. Press the tray Open/Close button on the front of the optical disk drive. The tray opens.
3. Hold the disc lightly and take it out from the tray.

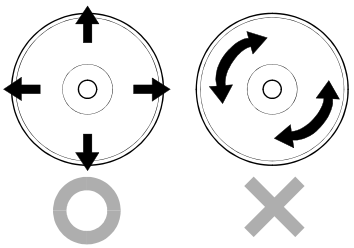
   NOTE: Do not touch the signal side of the disc with your hand.

4. Wipe the tray with a dry soft cloth.

   IMPORTANT: Do not wipe the lens of the optical disk drive. Doing so may damage the lens and may cause a malfunction of the drive.

5. Push on the tray front to close the tray.
6. Wipe the signal side of the disc with a dry soft cloth.

   IMPORTANT: Wipe disc from the center to the outside. Use only disc cleaner if necessary. Cleaning a disc with record spray/cleaner, benzene, or thinner causes damage to the disc contents. At worst, inserting the disc into the server may cause failure.



SYSTEM DIAGNOSTICS

The System Diagnostics runs several tests on the server.

Select [Tool menu] - [Test and diagnostics] in the NEC EXPRESSBUILDER to diagnose the system.

Test Items

The following items are tested in system diagnostics.

- Memory
- CPU cache memory
- Hard disk drive used as a system

IMPORTANT: When executing the system diagnostics, make sure to disconnect the LAN cable. Executing the system diagnostics with the LAN cable connected, the network may be influenced.

NOTE: On checking the hard disk drive, no data is written into the disk.

Startup and Exit of System Diagnostics

There are two ways to diagnose the server: to use the local console (keyboard) of the server itself, and to use the management PC via serial port (remote console).

> **IMPORTANT:** Two methods of LAN and the serial port are mentioned in "Maintenance Tools" of Chapter 8 "Troubleshooting" in the way of communicating in remote console.
> Use the serial port to execute System Diagnostics with remote console.
> The LAN connection is not for System Diagnostics.

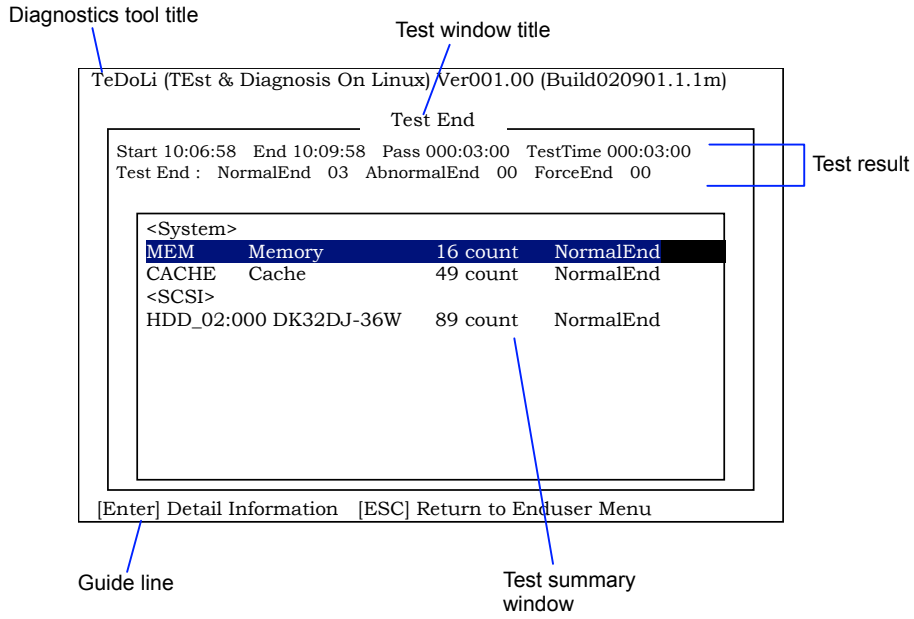
Procedures to start the diagnostics program are as follows:

1. Shutdown the OS, and power off the server. Then, unplug the power cord.
2. Disconnect all the LAN cables from the server.
3. Plug the power cord and power on the server.
4. Use the NEC EXPRESSBUILDER DVD to start the system.
5. Select [Tool menu (Normal mode)] when local console of the server is used for, or select [Tool menu (Redirection mode)] when remote console is used for.

> **NOTE:** If the system displays the [Language selection] menu, select [English].

6. Select [Test and diagnostics].

Select [End-User Mode] and the system diagnostics starts. The diagnostics will be completed in approximately three minutes. When the diagnostics is completed, the screen of the display changes as shown below:


Diagnostics tool title
Test window title
TeDoLi (TEst & Diagnosis On Linux) Ver001.00 (Build020901.1.1m)
Test End
Start 10:06:58 End 10:09:58 Pass 000:03:00 TestTime 000:03:00
Test End : NormalEnd 03 AbnormalEnd 00 ForceEnd 00
Test result
<System>
MEM Memory 16 count NormalEnd
CACHE Cache 49 count NormalEnd
<SCSI>
HDD_02:000 DK32DJ-36W 89 count NormalEnd
[Enter] Detail Information [ESC] Return to Enduser Menu
Guide line
Test summary window

– Diagnostics tool title

  Shows the name and version of the diagnostic tool.

– Test window title

  Shows the progress of the diagnostics. "Test End" is displayed when the diagnostics completes.

– Test result

  Shows the start, end, and elapsed time and completion status of the diagnostics.

– Guide line

  Shows the details of the keys to operate window.

– Test summary window

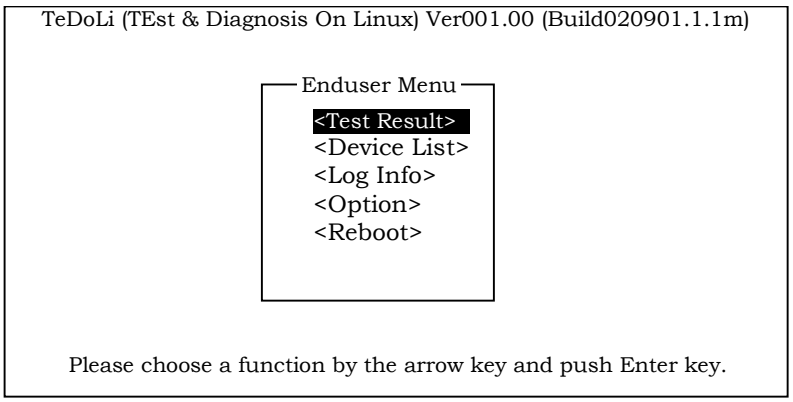
  Shows the results of each test that executed the diagnostics. Move the cursor and press the **Enter** key on the cursor line to display the details of the test.

When an error is detected by the system diagnostics, the relevant test result in the Test summary window is highlighted in red, and "Abnormal End" is displayed in the result on the right side.

Move the cursor to the test that detected the error, and press the **Enter** key. Record the error message that has been output to the Detail Information screen and contact your service representative.

7. Follow the guide line shown at the bottom of the screen, and press the **Esc** key.

   The [Enduser Menu] below is displayed.



<Test Result> Shows the diagnostics completion screen of the above diagnostics.

<Device List> Shows a list of connected devices.

<Log Info> Shows the log information of the diagnostics. It can be saved on a floppy disk.
To save it on a floppy disk, insert a formatted floppy disk to the floppy disk drive, and select <Save(F)>.

<Option> Optional features can be used from this menu.

<Reboot> Reboots the system.

8. Select <Reboot> in the [Enduser Menu] above.

   The server restarts and the system is started from the NEC EXPRESSBUILDER.

9. Exit the NEC EXPRESSBUILDER, and remove the DVD from the optical disk drive.
10. Power off the server and unplug the power cord from the receptacle.
11. Reconnect all the LAN cables that have been disconnected in Step 2 to the server.
12. Plug in the power cord.

This completes the system diagnostics.

RELOCATING/STORING THE SERVER

Follow the procedure below to relocate or store the server:

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

- Never attempt to lift the server only by yourself.
- Do not install the server in any place other than specified.
- Do not connect/disconnect any interface cable with the power cord of the server plugged to a power source.

IMPORTANT:

- If the server needs to be relocated/stored due to a change in the floor layout to a great extent, contact the service representative.
- Make sure to make a backup copy of your valuable data in the hard disk drive, if any.
- Make sure not to apply a shock to hard disk drives to relocated the server if the contains any.

1. Take a media out of the server, if any.
2. Power off the server (the POWER LED goes off).
3. Unplug the power cord of the server from a power outlet.
4. Remove all the cables from the server.
5. Hold the server by its bottom with at least three persons to carry the server.

IMPORTANT: Do not hold the front door to lift the server. The front door may be disengaged from the server, causing personal injury.

6. Protect the server with the shock-absorbing materials, and pack it securely.

(This page is intentionally left blank.)

Chapter 8

Troubleshooting

If your server does not operate as expected, read this chapter before assuming a failure.

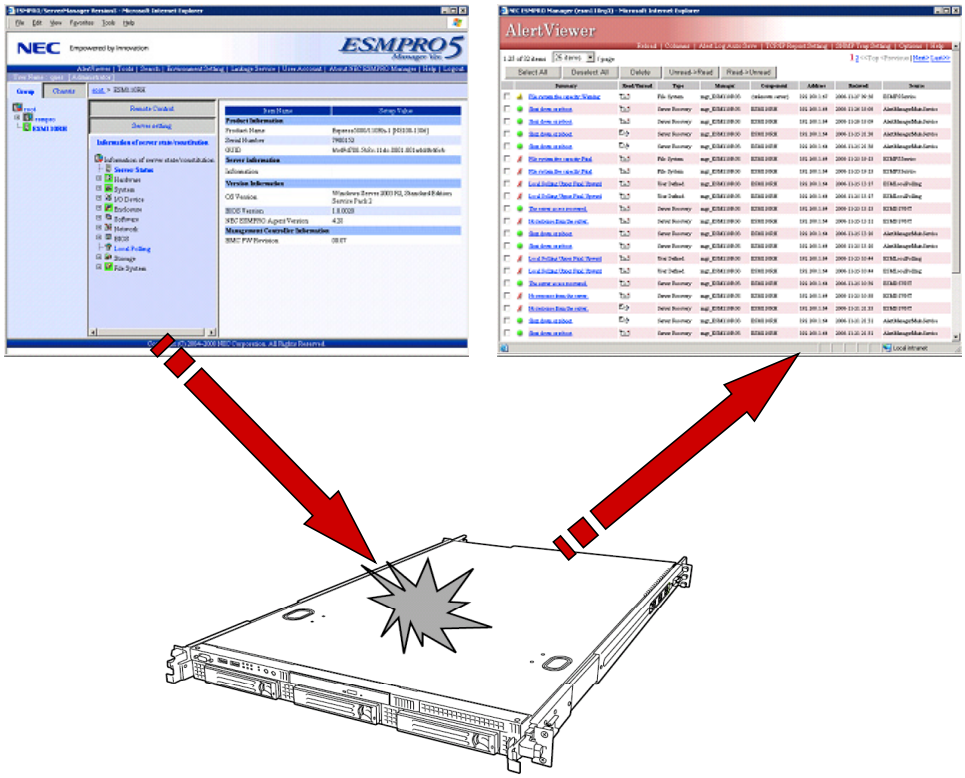
> **NOTE:** For provision against an unexpected failure, it is recommended to install NEC ESMPRO to your computer.

SYSTEM VIEWERS

Monitor the occurrence of fault by NEC ESMPRO during the system operation.

Especially take note on whether any alert is reported to NEC ESMPRO Manager on the management PC. Check whether any alert is reported on NEC ESMPRO Manager.

[Example]



LEDS

The server includes LEDs to indicate the server states by a variety of colors and display patterns on the front panel, hard disk drive, and power supply.

Chapter 2 "Status Indicators" lists the LED displays and their meanings and the actions taken at occurrences of failures.

ERROR MESSAGES

If an error occurs in the server, an error message appears on the display unit connected to the server.

Error Messages after Power-on

Powering on the server automatically starts the self-diagnostic program, POST (Power On Self-Test). When the POST detects any error, it displays an error message and its measure on the display unit.

Follow the table below to troubleshoot such errors. However, even when there is no hardware failure, use of the keyboard or mouse at the following timing causes the POST to assume a keyboard controller error and stop processing.

- Immediately after the server is powered
- Immediately after the system is rebooted in response to a keyboard instruction (simultaneous key entry of **Ctrl** + **Alt** + **Delete**)
- Immediately after the system is rebooted in response to an OS instruction
- During hardware initialization following restart of the POST

When the POST detects a hardware failure due to the above reason, restart the server once again. If the same error message reappears, you may assume there is no hardware error. To ensure normal operation of the server, however, make sure to follow the following restrictions.

- Do not make any keyboard entry or use the mouse before the memory count appears on the screen following the server power-on.
- Do not make any keyboard entry or use the mouse before the start-up message of the SCSI Configuration Utility appears on the screen following the server reboot.

IMPORTANT: Take a note on the on-screen message before contacting your service representative. The alarm indication would be a great help for maintenance.

POST Error Messages

When POST detects an error, it displays an error message on the display unit screen. The following table lists error messages and actions to take.

> **IMPORTANT:** Take a note on the messages displayed before consulting with your service representative. Alarm messages are useful information for maintenance.

Error code	Error message	Recommended Action
0200	Failure Fixed Disk.	Contact your service representative.
0210	Stuck Key.	Disconnect the keyboard and connect it again.
0211	Keyboard error	Disconnect the keyboard and connect it again. If the error cannot be corrected, contact your service representative.
0213	Keyboard locked - Unlock key switch.	Release the lock of the key switch. If the error cannot be corrected in spite of the release of the lock, contact your service representative.
0220	Monitor type does not match CMOS - Run SETUP.	Start the SETUP. If the error cannot be corrected in spite of the start of SETUP, contact your service representative.
0230	System RAM Failed at offset.	Contact your service representative.
0231	Shadow Ram Failed at offset.	
0232	Extended RAM Failed at address line.	
0250	System battery is dead - Replace and run SETUP.	Contact your service representative to replace the battery. (After restarting the computer, start the SETUP to provide the setting again.)
0251	System CMOS checksum bad - Default configuration used.	The default values have just been set. Start the SETUP to provide the setting again. If the error cannot be corrected, contact your service representative.
0252	Password checksum bad - Passwords cleared.	The password has just been cleared. Start the SETUP to provide the setting again.
0260	System timer error.	Start the SETUP to set the date and time again. If the same error occurs successively in spite of the resetting, contact your service representative.
0270	Real time clock error.	
0271	Check date and time setting.	
0280	Previous boot incomplete - Default configuration used.	Start the SETUP to provide the setting again.
0281	Memory size found by POST differed from EISA CMOS.	Initialize EISA CMOS.
02D0	System cache error - Cache disabled.	The cache cannot be used. Contact your service representative.

Error code	Error message	Recommended Action
02D1	System Memory exceeds the CPU's caching limit.	Contact your service representative.
02F4	EISA CMOS not write able.	
02F5	DMA Test Failed.	
02F6	Software NMI Failed.	
02F7	Fail-safe Timer NMI Failed.	
0611	IDE configuration changed	Check IDE configuration.
0612	IDE configuration error - device disabled	
0613	Com A configuration changed	Check COM A configuration.
0614	Com A config. error - device disabled	
0615	Com B configuration changed	Check COM B configuration.
0616	Com B config. error - device disabled	
0B22	Processors are installed out of order.	Request the maintenance to replace the CPU.
0B28	Unsupported CPU detected on CPU socket 1.	Make sure that the server supports the CPU. If you are not sure, contact your service representative to request the maintenance.
0B29	Unsupported CPU detected on CPU socket 2.	
0B42	Resource Conflict	Contact your service representative.
0B43	Warning: IRQ not configured	
0B45	System configuration Data Write Error	
0B60	CPU1_DIMM1 has been disabled	Contact your service representative.
0B61	CPU1_DIMM2 has been disabled	
0B62	CPU1_DIMM3 has been disabled	
0B63	CPU1_DIMM4 has been disabled	
0B64	CPU1_DIMM5 has been disabled	
0B65	CPU1_DIMM6 has been disabled	
0B66	CPU2_DIMM1 has been disabled	
0B67	CPU2_DIMM2 has been disabled	
0B68	CPU2_DIMM3 has been disabled	
0B69	CPU2_DIMM4 has been disabled	
0B6A	CPU2_DIMM5 has been disabled	
0B6B	CPU2_DIMM6 has been disabled	
0B70	The error occurred during temperature sensor reading.	Contact your service representative.

Error code	Error message	Recommended Action
0B71	System Temperature out of the range.	Contact your service representative to replace the fan.
0B74	The error occurred during voltage sensor reading.	Contact your service representative.
0B75	System voltage out of the range.	
0B80	BMC Memory Test Failed.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B81	BMC Firmware Code Area CRC check failed.	
0B82	BMC Core Hardware failure.	
0B83	BMC IBF or OBF check failed.	
0B8A	BMC SEL area full.	Start the SETUP and select [Server] - [Event Log configuration] - [Clear All Error Logs] and press **Enter** to clear event logs.
0B8B	BMC progress check timeout.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B8C	BMC command access failed.	
0B8D	Could not redirect the console - BMC Busy -	
0B8E	Could not redirect the console - BMC Error -	
0B8F	Could not redirect the console - BMC Parameter Error -	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B90	BMC Platform Information Area corrupted.	
0B91	BMC update firmware corrupted.	
0B92	Internal Use Area of BMC FRU corrupted.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B93	BMC SDR Repository empty.	Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B94	IPMB signal lines do not respond.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B95	BMC FRU device failure.	This is not a fatal error. Turn off the power once and then on again to restart the server. If the error cannot be corrected, contact your service representative.
0B96	BMC SDR Repository failure.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B97	BMC SEL device failure.	
0B98	BMC RAM test error.	
0B99	BMC Fatal hardware error.	
0B9A	BMC not responding.	Update the RMC firmware. If the error cannot be corrected, contact your service representative.

Error code	Error message	Recommended Action
0B9B	Private I2C bus not responding.	Turn off the power once and then on again to start the server. If the error cannot be corrected, contact your service representative.
0B9C	BMC internal exception.	
0B9D	BMC A/D timeout error.	
0B9E	SDR repository corrupt.	
0B9F	SEL corrupt.	
0BB0	SMBIOS – SROM data read error.	Contact your service representative.
0BB1	SMBIOS – SROM data checksum bad.	
8068	Unsupported Processor Speed detected on CPU Slot 1.	Contact your service representative.
8069	Unsupported Processor Speed detected on CPU Slot 2.	
8150	NVRAM Cleared by Jumper	Start SETUP and provide setting again.
8151	Password Cleared by Jumper	Start SETUP and set password again.
8160	Mismatch Processor Type/Speed detected on Processor 1.	Contact your service representative.
8161	Mismatch Processor Type/Speed detected on Processor 2.	
None	Expansion ROM not initialized – PCI Mass Storage Controller in slot n (n: slot number)	Disable initialization of the optional device expansion ROM by using the BIOS SETUP utility (see Chapter 4).
	H/W Configuration of BMC is corrupted. !! Update BMC F/W Configuration by configuration tool !! !! Refer to BMC configuration manual !!	Use the NEC EXPRESSBUILDER to configure the remote management card (see Chapter 6).
	Memory Scramble mode disabled	Contact your service representative.

Messages displayed by RAID Controller during POST

On-screen message	Action
Memory/battery problems were detected. The adapter has recovered, but cached data was lost. Press any key to continue, or 'C' to load the configuration utility.	Contact your service representative.
Firmware version inconsistency was detected. The adapter has recovered, but cached data was lost. Press any key to continue, or 'C' to load the configuration utility.	Contact your service representative.
Foreign configuration(s) found on adapter Press any key to continue, or 'C' to load the configuration utility.	Press **C** to run the utility to import or clear configuration.
Previous configuration cleared or missing Importing configuration created on MM/DD hh:mm Press any key to continue, or 'C' to load the configuration utility.	Contact your service representative.
An enclosure was found that contains both SAS and SATA drives, but this controller does not allow mixed drive types in a single enclosure. Please correct the problem then restart your system. Press any key to continue, or 'C' to load the configuration utility.	RAID Controller may be faulty. Contact your service representative to replace the RAID controller.
SAS drives were detected, but this controller does not support SAS drives. Please remove the SAS drives then restart your system. Press any key to continue, or 'C' to load the configuration utility.	RAID Controller may be faulty. Contact your service representative to replace the RAID controller.
SATA drives were detected, but this controller does not support SATA drives. Please remove the SATA drives then restart your system. Press any key to continue, or 'C' to load the configuration utility.	RAID Controller may be faulty. Contact your service representative to replace the RAID controller.
Invalid SAS topology detected. Please check your cable configurations, repair the problem, and restart your system.	Check if cable is connected properly. If the same error persists, contact your service representative.
The battery hardware is missing or malfunctioning, or the battery is unplugged. If you continue to boot the system, the battery-backed cache will not function. Please contact technical support for assistance. Press 'D' to disable this warning (if your controller does not have a battery).	<When battery is not used> Press **D** to hide this message. <When battery is used> Check if battery is connected properly. If the same error persists, contact your service representative.

On-screen message	Action
Your VDs that are configured for write-back are temporarily running in write-through mode. This is caused by the battery being charged, missing, or bad. Please allow battery to charge for 24 hours before evaluating battery for replacement. The following VDs are affected :XX Press any key to continue.	<When battery is not used> Ignore this message. <When battery is used> Run WebBIOS or Universal RAID Utility to check if battery is detected. • Battery is not detected: – Check if battery is connected properly. – Battery may be insufficiently charged. Halt the system for 24 hours or longer and charge battery. • Battery is detected: – Halt the system for 9 hours or longer and charge battery. If the same error persists, contact your service representative.
Invalid SAS Address present in MFC data. Please program valid SAS Address, and restart your system.	Contact your service representative.
Some configured disks have been removed from your system, or are no longer accessible. Please check your cables and also ensure all disks are present. Press any key to continue, or 'C' to load the configuration utility.	Check if cable and hard disk drives are connected properly. If the same error persists, contact your service representative.
The following VDs have missing disks: xx If you proceed (or load the configuration utility), these VDs will be marked OFFLINE and will be inaccessible. Please check your cables and ensure all disks are present. Press any key to continue, or 'C' to load the configuration utility.	
The following VDs are missing: xx If you proceed (or load the configuration utility), these VDs will be removed from your configuration. If you wish to use them at a later time, they will have to be imported. If you believe these VDs should be present, please power off your system and check your cables to ensure all disks are present. Press any key to continue, or 'C' to load the configuration utility.	
All of the disks from your previous configuration are gone. If this is an unexpected message, then please power off your system and check your cables to ensure all disks are present. Press any key to continue, or 'C' to load the configuration utility.	

On-screen message	Action
The cache contains dirty data, but some VDs are missing or will go offline, so the cached data can not be written to disk. If this is an unexpected error, then please power off your system and check your cables to ensure all disks are present. If you continue, the data in cache will be permanently discarded. Press 'X' to acknowledge and permanently destroy the cached data.	Check if cable, hard disk drives, and upgrade kit are connected properly. If the same error persists, contact your service representative. NOTE: If you press **X**, the data in cache memory will be lost.
Invalid memory configuration detected. Please contact your system support. System has halted.	Contact your service representative to replace the RAID controller.
RAID Adapter FW Failed Validation!!! Adapter needs to be reflashed. Press any key to continue.	Contact your service representative to replace the RAID controller.
Cache data was lost due to an unexpected power-off or reboot during a write operation, but the adapter has recovered. This could be due to memory problems, bad battery, or you may not have a battery installed. Press any key to continue or 'C' to load the configuration utility.	<When battery is not used> Run WebBIOS or Universal RAID Utility to check the setting for cache mode. If forced write-back is specified, change it to constant write back or write through mode. <When battery is used> Check if battery is connected properly. If the same error persists, contact your service representative to replace the RAID controller and battery.
Entering the configuration utility in this state will result in drive configuration changes. Press 'Y' to continue loading the configuration utility or please power off your system and check your cables to ensure all disks are present and reboot.	Contact your service representative to replace the RAID controller.
Multibit ECC errors were detected on the controller. DIMM on the controller needs replacement. If you continue, data corruption can occur. Press 'X' to continue or else power off the system and replace the DIMM module and reboot. If you have replaced the DIMM please press 'X' to continue.	Contact your service representative to replace the RAID controller.
Multiple Single-bit ECC errors were detected during the previous boot of the controller. DIMM on the controller needs replacement. If you continue, data corruption can occur. Press 'X' to continue or else power off the system and replace the DIMM module and reboot. If you have replaced the DIMM please press 'X' to continue.	Contact your service representative to replace the RAID controller.

On-screen message	Action
Single-bit overflow ECC errors were detected during the previous boot of the controller. DIMM on the controller needs replacement. If you continue, data corruption can occur. Press 'X' to continue or else power off the system and replace the DIMM module and reboot. If you have replaced the DIMM please press 'X' to continue.	Contact your service representative to replace the RAID controller.

Beep Codes

If an error occurs during the POST, the server beeps, indicating the type of error.

Each number indicates the number of short beeps, and a hyphen indicates a pause. For example, the beep interval 1-5-2-2 indicates 1 beep, pause, 2 beeps, pause, 2 beeps, pause, and 3 beeps notifying that no processor is detected on the mother board.

Beep code	Description	Recommended action
1-2	Option ROM initialization error	1. Check if the optional add-in card is properly installed. 2. Run the BIOS SETUP utility to check the IRQ assignment. 3. Ask your service representative to replace the add-in card or mother board..
3-3	ROM checksum error	Replace the mother board.
1-2-2-3		
1-3-1-1	DRAM refresh test error	1. Check if the DIMM is properly installed. 2. Remove the DIMM once, and then re-install it to check if it operates normally. 3. Ask your service representative to replace the failed DIMM or mother board.
1-3-1-3	Keyboard controller error	1. Check if the keyboard is properly connected. 2. Replace the mother board.
1-3-3-1	No memory or capacity check error	1. Check if the DIMM is properly installed. 2. Remove the DIMM once, and then re-install it to check if it operates normally. 3. Ask your service representative to replace the failed DIMM or mother board..
1-3-4-1	DRAM address error	
1-3-4-3	DRAM test Low Byte error	
1-4-1-1	DRAM test High Byte error	
1-5-1-1	CPU startup error	1. Check if the CPU is properly installed. 2. Remove the CPU once, and then re-install it to check if it operates normally. 3. Ask your service representative to replace the failed CPU.
1-5-2-1	No CPU installed	
1-5-4-2	AC power interrupted	The AC power supply is interrupted due to power failure or momentary voltage drop and the system is restarted. This is not an error.
1-5-4-4	Abnormal voltage	Replace the mother board.
2-1-2-3	BIOS ROM copyright test error	Replace the mother board.
2-2-3-1	Unexpected interrupt test error	

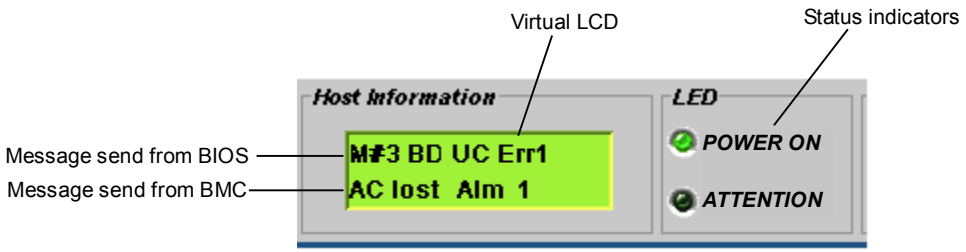
Error Messages on Virtual LCD

NEC EXPRESSSCOPE Engine 2 (Remote Management Controller) on your server board allows you to monitor the server status on the WEB browser-based screen of the client PC via network.

The virtual LCD (16 digits x 2 lines) in the "Host Information" area displays the POST codes and status message.

When POST detects an error, the POST error code is displayed on the virtual LCD upon completion of POST. See the table for POST error codes for details.

Example:



Messages displayed on upper line (BIOS message)

On-screen message	Description	Action
XX BIOS Rev YYYY	POST in progress. XX: POST code, YYYY: BIOS version	This is not an error.
Mem Reconfigured	POST completes with memory degraded.	Contact your service representative. Try the following steps to cancel the error. 1. Start BIOS SETUP. 2. Select [Advanced] - [Memory Configuration] - [Memory Retest] - [Yes]. 3. Select [Exit] - [Exit Saving Changes].
Memory C-Err XX	A correctable error frequently occurs in DIMM #XX.	Contact your service representative.
PCI Bus PERR XX	A PERR has occurred in the PCI bus XX.	
PCI Bus SERR XX	A SERR has occurred in the PCI bus XX.	
Mem Err Disable	A correctable memory error frequently occurred.	
Prepare To Boot	POST completes normally.	This is not an error.

Messages displayed on lower line (BMC message)

When the following messages are displayed on the virtual LCD, restart your server by turning off and on. If an error still occurred, contact your service representative for maintenance.

On-screen message	Description
BB +1.5v Alm XX	Voltage alarm occurred on the mother board. XX=09: high voltage (fetal) XX=07: high voltage (warning) XX=02: low voltage (warning) XX=00: low voltage (fetal)
BB +1.8v Alm XX	
BB 1.8vsb Alm XX	
BB +3.3v Alm XX	
BB 3.3vsb Alm XX	
BB +5.0v Alm XX	
BB 5vsb Alm XX	
BB +12v Alm XX	
Processor1 P_Vtt Alm XX	
Processor2 P_Vtt Alm XX	
Processor1 1.5v Alm XX	
Processor2 1.5v Alm XX	
Baseboard 1.0vsb Alm XX	
Baseboard 1.1v Alm XX	
Baseboard 1.2vsb Alm XX	
BB Temp1 Alm XX	Mother board thermal error occurred. XX=09: high voltage (fetal) XX=07: high voltage (warning) XX=02: low voltage (warning) XX=00: low voltage (fetal)
DUMP Request !	Dump switch is pressed.
OS shutdown Alm	OS shutdown alarm occurred.
Power Unit 1 Alm	Power unit #1 Failure occurred.
Power Unit 2 Alm	Power unit #2 Failure occurred.
Proc Missing	Processor is not found.
Proc 1 T-Trip	Thermal Trip occurred on processor #1 or #2. The system is forcibly turned off.
Proc 2 T-Trip	
Proc1 Therm % XX	Processor #1 or #2 thermal error occurred. XX=09: high temperature (fetal) XX=07: high temperature (warning) XX=02: low temperature (warning) XX=00: low temperature (fetal)
Proc2 Therm % XX	
CPU1_DIMM1 Tmp XX	
CPU1_DIMM2 Tmp XX	
CPU1_DIMM3 Tmp XX	
CPU1_DIMM4 Tmp XX	
CPU1_DIMM5 Tmp XX	
CPU1_DIMM6 Tmp XX	
CPU2_DIMM1 Tmp XX	
CPU2_DIMM2 Tmp XX	
CPU2_DIMM3 Tmp XX	
CPU2_DIMM4 Tmp XX	
CPU2_DIMM5 Tmp XX	
CPU2_DIMM6 Tmp XX	
FP Temp Alm XX	

On-screen message	Description
Proc1 VccpAlm XX Proc2 VccpAlm XX	Voltage alarm occurred on processor #1 or #2. XX=09: high voltage (fetal) XX=07: high voltage (warning) XX=02: low voltage (warning) XX=00: low voltage (fetal)
ChipSet T-Trip	Forcedly powered off due to temperature alarm on chipset.
CPU1_DIMM U-Err	Unrecoverable error occurred on one of DIMMs on CPU1 side.
CPU2_DIMM U-Err	Unrecoverable error occurred on one of DIMMs on CPU2 side.
Processor 1 IERR Processor 2 IERR	IERR occurred on processor #1 or #2.
SMI timeout	SMI timeout occurred.
HDD 1 Fault HDD 2 Fault HDD 3 Fault HDD 4 Fault HDD 5 Fault HDD 6 Fault	The system operates with HDD being degraded. (Supported only when Internal RAID Controller (equivalent to N8103-116A) or Onboard RAID Controller (LSI Embedded MegaRAID™) is used.) HDD 4 Fault through HDD 6 Fault are shown on 2.5-inch hard disk model only.
Sys Fan 1R Alarm	Sys Fan 1R alarm occurred.
Sys Fan 2R Alarm	Sys Fan 2R alarm occurred.
Sys Fan 3R Alarm	Sys Fan 3R alarm occurred.
Sys Fan 4R Alarm	Sys Fan 4R alarm occurred.
Sys Fan 5R Alarm	FSys Fan 5R alarm occurred.
Sys Fan 6R Alarm	Sys Fan 6R alarm occurred.
Sys Fan 7R Alarm	Sys Fan 7R alarm occurred.
Sys Fan 1F Alarm	Sys Fan 1F alarm occurred.
Sys Fan 2F Alarm	Sys Fan 2F alarm occurred.
Sys Fan 3F Alarm	Sys Fan 3F alarm occurred.
Sys Fan 4F Alarm	Sys Fan 4F alarm occurred.
Sys Fan 5F Alarm	Sys Fan 5F alarm occurred.
Sys Fan 6F Alarm	Sys Fan 6F alarm occurred.
Sys Fan 7F Alarm	Sys Fan 7F alarm occurred.
VBAT Alm XX	Voltage alarm in lithium battery occurred. XX=09: high voltage (fetal) XX=07: high voltage (warning) XX=02: low voltage (warning) XX=00: low voltage (fetal)
WDT timeout	Watchdog timer timeout error occurred.

SOLVING PROBLEMS

When the server fails to operate as expected, see the following to find out your problem and follow the instruction given before asking for repair.

If the server still fails to operate successfully after solving your problem, take a note on the on-screen message and contact your service representative.

Problems with the Server

Fail to power on the server:

- ❑ Is the server is properly supplied with power?
  - → Check if the power cord is connected to a power outlet (or UPS) that meets the power specifications for the server.
  - → Make sure to use the power cord provided with the server. Check the power cord for broken shield or bent plugs.
  - → Make sure the power breaker for the connected power outlet is on.
  - → If the power cord is plugged to a UPS, make sure the UPS is powered and it outputs power. See the manual that comes with the UPS for details.

    Power supply to the server may be linked with the connected UPS using the BIOS setup utility of the server.

    <Menu to check: [Server] - [AC-LINK]>
- ❑ Did you press the POWER switch?
  - → Press the POWER switch on the front of the server to turn on the power (the POWER LED lights).

Fail to power off the server:

- ❑ Is the POWER switch mask feature enabled?
  - → Restart the server and start the BIOS setup utility.

    <Menu to check: [Security] - [Power Switch Inhibit]>
- ❑ Is the server running in the Secure Mode?
  - → The POWER switch is disabled in the Secure Mode. (Forced shutdown is also not available.) To release the Secure Mode, enter the password specified with the BIOS SETUP utility.

No screen display appears with beep:

→ Check whether DIMMs are connected to the mating connectors firmly.

→ Check whether DIMMs of different specifications are installed in the specific bank. See Chapter 9 for the specifications of DIMMs.

→ Take a note of beep code pattern, and take appropriate action according to the table listed earlier in "Beep Codes".

POST fails to complete:

- ❑ Is the DIMM board installed?

  → At least two DIMM boards are required for operation.

  → DIMMs must be populated in correct order. See Chapter 4 for details.

  → Installed DIMMs must be the same speed and must all be registered.

- ❑ Is the memory size large?

  → The memory check may take a few seconds if the memory size is large. Wait for a while.

- ❑ Did you perform any keyboard or mouse operation immediately after you started the server?

  → If you perform any keyboard or mouse operation immediately after start-up, POST may accidentally detect a keyboard controller error and stops proceeding. In such a case, restart the server once again. Do not perform any keyboard or mouse operation until the BIOS start-up message appears when you restart the server.

- ❑ Does the server have contains appropriate memory boards or PCI devices?

  → Operation of the server with unauthorized devices is not guaranteed.

Fail to access to internal or external devices (or such devices fail to operate):

- ❑ Are cables properly connected?

  → Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.

- ❑ Is the power-on order correct?

  → When the server has any external devices connected, power on the external devices first, then the server.

- ❑ Did you install drivers for connected optional devices?

  → Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.

- ❑ Is BIOS configuration correct?

  → When the server has PCI devices connected, make sure to set the PCI device interrupt and others with the BIOS SETUP utility of the server. (Most PCI devices generally do not require any change to the configuration, but some boards do require specific settings. Refer to the manual that comes with the board for details to make correct settings.

  <Menus to check: [Advanced] - [PCI Configuration] - [PCI Slot xx ROM]
  x: PCI slot number>

  → Some devices connected to the serial or parallel port may require I/O port address or operation mode settings. Refer to the manual that comes with the board for details to make correct settings.

  <Menu to check: [Advanced] - [Peripheral Configuration]>

The POWER switch and sleep feature are disabled:

- ❑ Is the POWER switch masked by the BIOS feature?

  → The BIOS can disable power-off with the POWER switch after the operating system is started (including shutdown by pressing the POWER switch for at least four seconds).
  Run the BIOS SETUP utility to change settings (see Chapter 4).

The keyboard or mouse fails to operate:

- ❑ Is the cable properly connected?
  - → You must use the provided keyboard/mouse branch cable (Y cable) for this server. Make sure that the provided cable is connected to the correct connector on the rear of the server.
  - → The keyboard or mouse does not operate if it is connected when the server is powered (not applicable to USB devices). Power of the server first and connect it properly.
- ❑ Is BIOS configuration correct?
  - → The keyboard and mouse may be disabled with the BIOS SETUP utility of the server. Check the settings with the BIOS SETUP utility.

    <Menus to check: [Advanced] - [Numlock]>
- ❑ Are the server drivers installed?
  - → Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed. (These drivers are installed along with the OS.) Some OS's allow you to change the keyboard and mouse settings. Refer to manual that comes with your OS to check that the keyboard and mouse settings are correct.

Fail to access to the disc:

- ❑ Is the disc properly set in the optical disk drive tray?
  - → The tray is provided with a holder to secure the disc. Make sure that the disc is placed properly in the holder.
- ❑ Is the disc applicable to the server?
  - → The disc for Macintosh is not available for use.
- ❑ Is the CD/FDD bay installed correctly?
  - → Reinstall the CD/FDD bay (see Chapter 9).
  - →

Inserted the correct disc but the message like the following is displayed:

```
The CD-ROM is not inserted or the wrong CD-ROM is inserted.
Please insert the correct CD-ROM.
OK
```

- ❑ Is the data side of the disc dirty or injured?
  - → Take the disc out of the optical disk drive, confirm that it is not dirty or injured, reset and click [OK].

Fail to access the hard disk drive:

(Refer to the documentation supplied with the RAID Controller.)

- ❑ Is the hard disk drive applicable to the server?

  → Operation of any device that is not authorized by NEC is not guaranteed.

- ❑ Is the hard disk drive properly installed?

  → Make sure to lock the hard disk drive with the lever on its handle. The hard disk drive is not connected to the internal connector when it is not completely installed (see Chapter 9).

Fail to access the (internal or external) SCSI devices:

- ❑ Is the SCSI device applicable to the server?

  → Operation of any SCSI device that is not authorized by NEC is not guaranteed.

- ❑ Are SCSI devices properly configured?

  → When the server has external SCSI devices connected, hard disk drive settings, including SCSI ID and terminator, are required. Refer to the manual that comes with the SCSI device for details.

- ❑ Are the SCSI controllers (including optional controllers) properly configured?

  → Use the SCSI BIOS setup utility for proper configuration of SCSI devices connected to the SCSI connector on the mother board. When the server has an optional SCSI controller installed and SCSI devices connected to it, use the SCSI BIOS setup utility that comes with the optional SCSI controller for proper configuration. See the manual that comes with the optional SCSI controller for details.

Event logs in using Intel Network adapter teaming

Event Type: Warning
Event Source: IANSMiniport
Event Category: None
Event ID: 11
Description: Adapter link down: Intel(R)PRO/1000 ----

Event Type: Warning
Event Source: IANSMiniport
Event Category: None
Event ID: 13
Description: Intel(R)PRO/1000 ---- has been deactivated from the team.

Event Type: Warning
Event Source: IANSMiniport
Event Category: None
Event ID: 16
Description: Team #0: The last adapter has lost link.
Team network connection has been lost.

Event Type: Warning
Event Source: IANSMiniport
Event Category: None
Event ID: 22
Description: Primary Adapter does not sense any Probes:
Intel(R)PRO/1000 ---- Possible reason: partitioned Team.

Above-mentioned event log will appear when the system starts.

There is no problem in LAN driver operation.

The server is not found on the network:

- ❑ Is the LAN cable connected?

  → Make sure to connect the LAN cable to the network port on the rear of the server. Also make sure that the LAN cable to use conforms with the network interface standard.

- ❑ Is BIOS configuration correct?

  → The internal LAN controller may be disabled with the BIOS SETUP utility of the server. Check the setting with the BIOS SETUP utility.

  <Menus to check:

  [Advanced] - [PCI Configuration] - [Onboard LAN] - [LAN Controller]>

- ❑ Have the protocol and service already configured?

  → Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.

- ❑ Is the transfer speed correct?

  → Open the network property dialog box in control panel to specify the "Link Speed & Duplex" value the same as the value specified for HUB.

Wake on LAN does not start from standby or paused state.

→ WOL (Wake On LAN) is not available while the system is in standby or paused state.

Problems with RAID System and RAID Controller

Check the following if the server configuring a RAID System does not operate properly or a management utility does not operate correctly. If a relevant item is found, follow the processing method.

Fail to install the OS:

- ❑ Is the RAID Controller configured?

  → Provide proper configuration for the RAID Controller by using the LSI Software RAID Configuration Utility or WebBIOS.

Fail to start the OS:

- ❑ Is the BIOS of the RAID Controller changed?

  → Set the BIOS correctly by using the LSI Software RAID Configuration Utility or WebBIOS.

- ❑ Does POST recognize the RAID Controller?

  → After making sure that the RAID Controller is connected correctly, then power on the server.

  If the RAID Controller is not recognized correctly despite correct connection, the RAID Controller may be failed. Contact your service representative.

Rebuild fails:

- ❑ Is the capacity of the hard disk drive to be rebuilt sufficient?

  → The hard disk drive to be rebuilt should have the same capacity of the failed had disk drive.

- ❑ Is RAID0 configured?

  → RAID0 has no data redundancy, therefore, Rebuild is disabled in the RAID0 configuration. Replace the failed hard disk drive, create the configuration data again and initialize the hard disk drives. Then recover the data by using backup data.

Auto rebuild fails:

- ❑ Was a sufficient time taken for hot swap of hard disk drives?

  → To allow the auto rebuild to operate correctly, it should take 90 seconds or longer for the interval between the removal of the failed hard disk drive and the installation of a new hard disk drive.

- ❑ Is configuration correct?

  → Check the setting of auto rebuild by using the LSI Software RAID Configuration Utility. <Menus to check: Top menu - [Objects] - [Adapter] - [Auto Rebuild]>

  * Auto Rebuild cannot be specified in WebBIOS.

A hard disk drive fails:

→ Contact your service representative.

Cannot enter standby:

→ If you use LSI Embedded MegaRAID™, system may not enter standby with heavy I/O.

Cannot enter Hibernation:

→ If you use LSI Embedded MegaRAID™, system may not enter hibernation with heavy I/O.

Physical device is not correctly displayed on Universal RAID Utility

→ If you use LSI Embedded MegaRAID™, a part of information on a physical device is not correctly displayed on Universal RAID Utility.
It is no problem.

Fail to install the OS:

- ❑ Did you create virtual disk?
  → Create virtual disks by using WebBIOS.

Fail to start the OS:

- ❑ Is RAID controller inserted firmly straight into the PCI slot?
  → Install the RAID controller properly.
- ❑ Is the RAID controller installed in the proper slot?
  → Check if the slot is appropriate to the RAID controller. If the same error persists, the RAID controller may be faulty. Contact your service representative.
- ❑ Are hard disk drives properly installed?
  → Install them properly.
- ❑ Is SAS cable connected correctly? (Check connection status with the server, hard disk drives, and additional HDD cage.)
  → Connect the SAS cable properly.
  If the same error persists, the hard disk drive may be faulty. Contact your service representative.

A hard disk drive fails:

→ Contact your service representative.

Rebuild fails:

- ❑ Is the capacity of the hard disk drive to be rebuilt sufficient?

  → The hard disk drive to be rebuilt should have the same capacity of the failed had disk drive.

- ❑ Is RAID0 configured for virtual disk?

  → RAID0 has no data redundancy, therefore, Rebuild is disabled in the RAID0 configuration. Replace the failed hard disk drive, then create the virtual disk again.

Check Consistency fails:

- ❑ Is virtual disk "Degraded"?

  → Replace the failed hard disk drive with new one, then perform Rebuild.

- ❑ Is RAID0 configured for virtual disk?

  → RAID0 has no data redundancy, therefore, Check Consistency is disabled in the RAID0 configuration.

Cannot set Write-Back for cache mode:

→ The current cache mode of RAID controller is displayed on [Virtual Disks] - [Properties] - [Policies] - "Write". If additional battery is faulty, is not connected, or insufficiently charged, the cache mode is changed to "WThru (Write Through)" even if you specify "WBack (Write Back)". See Chapter 4 for details.

Additional battery (N8103-123 or N8103-124) is not detected, or POST displays the following message:

```
The battery hardware is missing or malfunctioning, or the battery is
unplugged, or the battery could be fully discharged. If you continue to
boot the system, the battery-backed cache will not function.
If battery is connected and has been allowed to charge for 30 minutes
and this message continues to appear, then contact technical support for
assistance.
Press 'D' to disable this warning (if your controller does not have a battery).
```

- ❑ Are cables connected properly?
  Check connection between battery pack and battery board, battery board and battery connector and battery control cable.

  → Connect them properly.

- ❑ Is battery connected immediately before?

  → The battery may not be detected if it is insufficiently charged. If the battery is not detected even after 24 hours, reboot the system.

  If the same error persists, the additional battery may be faulty. Contact your service representative.

Event ID129:

The following message appears on Windows Event Log.

Source:	msas2k3
Event ID:	129
Type:	Warning
Description:	Information about Event ID (129) (Source: msas2k3) is not found. -----

→ Retry by OS has succeeded. It is not the problem in operating the system.

Event ID317:

The following message may be registered in RAID log in Universal RAID Utility and OS log (Event Log or Windows, syslog of Linux).

Source:	Raidsrv
Event ID:	317 (8000013D)
Type:	Warning
Description:	<RU0317>[CTRL: %1 PD:%2(%3) %4 %5] An error of warning level occurred on physical device. Error code: %6

→ Single-shot message indicates the successful retry even if the message above is registered. If this message is repeatedly registered, physical device may be faulty. Contact your service representative.

Event ID505:

When the RAID controller has additional battery (N8103-123 or N8103-124), the following message is registered in RAID log in Universal RAID Utility and OS log (Event Log or Windows, syslog of Linux).

Source:	raidsrv
Event ID:	505
Type:	Warning
Description:	<RU0505> [CTRL: RAID controller number] Temperature of battery is high.

If the event shown above is registered, check the current cache mode of RAID controller by using the Universal RAID Utility.

→ If the current cache mode is set to "Write Back", it is not the problem in operating the system.

→ If the current cache mode is set to "Write Through", the temperature of battery raises temporarily due to refresh operation. Refresh operation pauses at occurrence of this event, thus the temperature drops. Refresh operation is resumed after the battery is cooled down. Upon completion of refresh operation, the current cache mode is changed to "Write Back". If "Write Through" is retained even after 24 hours, the battery may be faulty. Replace the battery.

Event ID508:

When the RAID controller has additional battery (N8103-123 or N8103-124), the following message is registered in RAID log in Universal RAID Utility and OS log (Event Log or Windows, syslog of Linux).

Source:	Raidsrv
Event ID:	508 (800001FC)
Type:	Warning
Description:	<RU0508> [CTRL: RAID controller number] The battery status is unstable.

- ❑ Wait for about 15 minutes, then check the cache mode of the RAID controller. If the current cache mode is set to "Write Back", it is not a problem in operating the system.

  → If the current cache mode is set to "Write Through", the battery need to be refreshed. Contact your service representative.

  If "Write Through" is retained even after 9 hours from start of refresh operation, the battery may be faulty. Replace the battery.

- ❑ Is battery connected immediately before?

  → This event may be logged until the refresh operation of battery is completed.

Access LED flashes:

- ❑ Access LED flashes frequently even while the hard disk drive is not accessed.

  → The Access LED flashes if Patrol Read is running. With SATA hard disk drive, the LED may stay on.

Problems with Windows

The following system events are logged when Windows Server 2008 is installed.

Event ID:	134
Source:	Microsoft-Windows-Time-Service
Level:	Warning
Description:	NtpClient was unable to set a manual peer to use as a time source because of DNS resolution error on 'time.windows.com,0x9'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter. The error was: No such host is known. (0x80072AF9)

Event ID:	263
Source:	PlugPlayManager
Level:	Warning
Description:	The service 'ShellHWDetection' may not have unregistered for device event notifications before it was stopped.

Event ID:	7000
Source:	Service Control Manager
Level:	Error
Description:	The Parallel port driver service failed to start due to the following error: The service cannot be started, either because it is disabled or because it has no enabled devices associated with it.

Event ID:	15016
Source:	Microsoft-Windows-Http
Level:	Error
Description:	Unable to initialize the security package Kerberos for server side authentication. The data field contains the error number.

→ These events do not affect system operation. Ignore these messages.

The following application events are logged when Windows Server 2008 is installed.

Event ID: 63
Source: Microsoft-Windows-WMI
Level: Warning
Description: A provider, Ncs2, has been registered in the Windows Management Instrumentation namespace Root\cimv2 to use the LocalSystem account.

This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

A provider, IntelEthernetDiag, has been registered in the Windows Management Instrumentation namespace Root\CIMv2 to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

A provider, WmiPerfClass, has been registered in the Windows Management Instrumentation namespace root\cimv2 to use the LocalSystem account. This account is privileged and the provider may cause a security violation if it does not correctly impersonate user requests.

→ These events do not affect system operation. Ignore these messages.

The following system event is logged when Windows Server 2008 is installed.

Event ID: 10
Source: VDS Dynamic Provider
Description: The provider failed while storing notifications from the driver. The Virtual Disk Service should be restarted. hr=80042505

→ Go to the Microsoft website:
http://support.microsoft.com/kb/948275/en-us/

The following application events are logged when Windows Server 2008 is installed.

Event ID: 1021
Source: Microsoft-Windows-Security-Licensing-SLC
Level: Warning
Description: SLUINotify service has failed to start. hr=0x80070424

Event ID: 1534
Source: Microsoft-Windows-User Profiles Service
Level: Warning
Description: Profile notification of event Create for component {56EA1054-1959-467f-BE3B-A2A787C4B6EA} failed, error code is -2147023591.

→ These events do not affect system operation. Ignore these messages.

There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.

Source: DCOM
Category: Error
Event ID: 10016
Description: The application-specific permission settings do not grant Local Activation permission for the COM server application with CLSID {555F3418-D99E-4E51-800A-6E89CFD8B1D7} to the user {NT AUTHORITY\LOCAL SERVICE} SID {S-1-5-19}.
This security permission can be modified using the component Services administrative tool.

→ It is not a problem in operating the system.

There are some cases that an event log is registered as follows when you install Windows Server 2003 x64 Editions.

Event Source: Service Control Manager
Event Type: Error
Event ID: 7011
Description: Timeout (30000 milliseconds) waiting for a transaction response from the IMAP4Svc service.

→ When this event is not registered by rebooting the system, it is not a problem in operating the system.

Installed Service Pack before application of Windows Server 2003 R2 DISC 2 during Windows Server 2003 R2 installation.

→ Apply Windows Server 2003 R2 DISC 2, and then install Service Pack again by "Updating the System".

There are some cases that an event log is registered as follows when you operate Windows Server 2003 R2.

Source: IPMIDRV

Type: Error

Event ID: 1001

Description: The IPMI device driver attempted to determine if the system supported an IPMI BMC device. The driver attempted to detect the presence of the IPMI BMC by searching the SMBIOS for Type 38 record. But either no record was found or the record was not compatible with the version of the device driver.
If a SMBIOS Type 38 record was detected, the Dump Data field of the event contains a binary representation of the record.

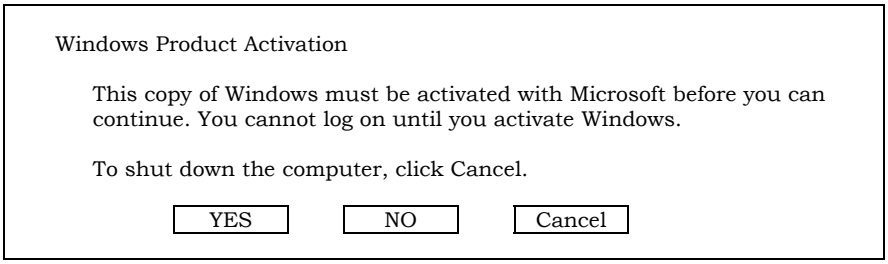
→ If you use "Hardware Management" which is provided by Windows Server 2003 R2, above-shown event log will be registered.

For more details, refer to "Enabling Microsoft Windows Server 2003 R2 Hardware Management" on the following site.

[NEC Express5800 Web Site]

http://www.nec.co.jp/express/download/W2K3_R2

The system displays the message below and fails to log on.


Windows Product Activation
This copy of Windows must be activated with Microsoft before you can continue. You cannot log on until you activate Windows.
To shut down the computer, click Cancel.
YES
NO
Cancel

→ In Windows Server 2003, the above message will be displayed if you use the operating system without executing the license authentication. Select "Yes", and execute the procedure for license authentication.

Cannot install the operating system correctly.

❑ Did you confirm the notes on installing the operating system?

→ See Chapter 6.

During installation, the following warning is registered in the System Log of the Event Viewer:

```
Error detected on the device \Device\CdRom0
during the paging operation.
```

→ There is no problem on this issue.

Fail to start the OS:

- ❑ Is a floppy disk in the floppy disk drive?

  → Take out the floppy disk and restart the server.

- ❑ Is the NEC EXPRESSBUILDER DVD in the optical disk drive?

  → Take out the NEC EXPRESSBUILDER DVD and restart the server.

- ❑ Is the OS broken?

  → Use recovery process to recover the system.

The OS presents unstable operation:

- ❑ Did you update the system?

  → Installing a network drive after installation of the OS may cause unstable operation. Use the NEC EXPRESSBUILDER DVD to update the system. (See Chapter 6.)

The system does not restart automatically when a stop error occurs, though the system is adjusted to automatically restarting:

→ When the system does not restart automatically, restart it manually.

The system restarts automatically when a stop error occurs, though the system is NOT adjusted to automatically restarting:

→ There is no problem about this issue.
Check the System Event Log to confirm that STOP error occurred.

Cannot turn the power OFF at the blue screen:

→ If you want to turn off the power at the blue screen, execute forced shutdown (forced shutdown: continue to press POWER switch for 4 seconds). The power will not be turned off if you press the switch for less than 3 seconds.

The PXE boot (network boot) fails or the server is not found on the network:

- ❑ Is the cable connected properly?

  → Connect the proper cable to the network port on the rear of the Express server. In addition, make sure that the used cable conforms to the network interface standard.

- ❑ Is BIOS configuration correct?

  → The internal LAN controller may be disabled with the BIOS SETUP utility of the server. Check the setting with the BIOS setup utility.

- ❑ Have the protocol and service already configured?

  → Install the distinctive network driver for the server. Make sure that the protocol, such as TCP/IP, and services are properly specified.

- ❑ Is the transfer speed correct?

  → Open the network property dialog box in control panel to specify the link speed and duplex value the same as the value specified for HUB.

The Telnet Service is not installed.

→ Adjust the computer name to 14 characters or less, and then install the Telnet Service according to <How to install the Telnet Service>.

<How to install the Telnet Service>

1. Click [Run] on Start menu.
2. Type "tlntsvr /service" in the [Open] box, and click [OK].
3. Click Start menu, point to [Control Panel] and click [Computer Management] and then click the [Services] to specify whether the Telnet Service is registered.

   * When the installation of Telnet Service is finished, there is no problem if the computer name is set to 15 characters or more.

Fail to start the OS with the /3GB switch

→ System often fails to start the OS with the /3GB switch.

In this case, please adjust the capacity of the user mode area using the /userva switch in reference to the following URL.

http://support.microsoft.com/kb/316739/en

The system time lags:

→ If you do not use the server that adjust time such as NTP (Network Time Protocol) Server, the system time may differ from actual time.

In this case, use NTP server or disable "Windows Time Service".

Problems with N8190-127/131 FibreChannel Controller

When N8190-127/131 is used, the names of the Fibre Channel controllers may appear with different names on Device Manager:

→ It is not a problem in operating the system. A directory that contains the driver software NEC EXPRESSBUILDER DVD is also displayed.

[Windows Server 2008 64-bit(x64) Edition]

<Drive Letter>:\009\win\\winnt\ws2008x64\elxstor\friendlyname.exe

[Windows Server 2008 32-bit(x86) Edition]

<Drive Letter>:\009\win\\winnt\ws2008\elxstor\frendlyname.exe

Problems with NEC EXPRESSBUILDER

When the server is not booted from the NEC EXPRESSBUILDER DVD, check the following:

- ❑ Did you set the NEC EXPRESSBUILDER during POST and restart the server?

  → If you do not set the NEC EXPRESSBUILDER during POST and restart the server, an error message will appear or the OS will boot.

- ❑ Is BIOS configuration correct?

  → The boot device order may be specified with the BIOS SETUP utility of the server. Use the BIOS SETUP utility to change the boot device order to boot the system from the optical disk drive first.

  <Menu to check: [Boot]>

- ❑ If [Os installation ***default***] is selected at Boot selection screen, following message is displayed.

  After this message appears, check the error and take the appropriate corrective action according to the message listed in the table below.

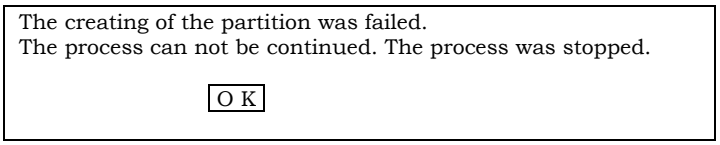
Message	Cause
This EXPRESSBUILDER version was not designed for this computer. Insert the correct version and click [OK]. (When you click [OK], the computer reboots.)	This NEC EXPRESSBUILDER version is not designed for this server. Execute the NEC EXPRESSBUILDER on the compliant server.
EXPRESSBUILDER could not get the hardware parameters written in this motherboard. This version is not designed for this computer or the motherboard may be broken. (When you click [OK], the computer reboots.)	This message is shown when NEC EXPRESSBUILDER could not find system-specific information because of mother board exchange and so on.
The hardware parameters written in this motherboard are incorrect. This version is not designed for this computer or the motherboard may be broken.	

Problems with Express Setup

The system partition is created by size smaller than specified value.

→ In Express Setup, there are some cases that the system partition is created by size about 8MB smaller than specified size.
It is not a problem in operating the system.

Following message appeared when you tried to install Express Setup to the hard disk drive that has smaller capacity than the specified partition size:



→ Cannot continue the setup.

Specify smaller partition size than the capacity of connected hard disk drive, and then retry the setup.

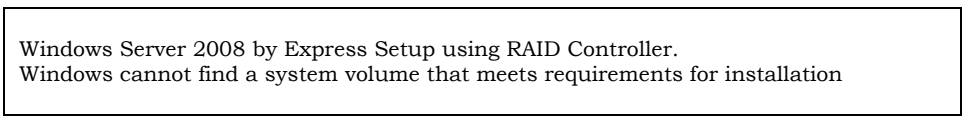
Specified to join the Domain, but the system is installed as Workgroup.

→ When the setup fails to join the Domain during the installation, it will install the system as Workgroup. Open [System] in Control Panel to specify joining the Domain.

Unable to specify the details of Network adapter.

→ In Express Setup, you can not specify the details of Network adapter. Specify them from Control Panel after starting Windows.

Following message appeared when you tried to install:


Windows Server 2008 by Express Setup using RAID Controller.
Windows cannot find a system volume that meets requirements for installation

→ See "RAID Configuration (Chapter 4)" to create RAID.

Or, see "Creating new RAID using RAID Controller (Page 5-70)" to configure RAID by EXPRESSBUILDER beforehand, and perform Express Setup.

In this case, select [Skip the logical drive creation] at [Enter RAID settings] (Step 4) screen of Express Setup.

Problems with Parameter File Creator

Fail to start Parameter File Creator:

- ❑ Parameter File Creator requires to run by "Microsoft® HTML Application host".

  → If Parameter File Creator does not start, associate the file type with "Microsoft® HTML Application host" via following process.

  1) Click [Run] on Start menu.
  2) Type "%windir%\system32\mshta.exe /register" in the [Open] box, and click [OK].

Problems with Autorun Menu

Cannot read documents:

- ❑ Do you have Adobe Reader installed correctly in your system?
  - → Some documents are supplied with PDF format. To read the document of PDF format, Adobe Reader is required in your system.
- ❑ Is the operating system Windows XP SP2(or later)?
  - → With Windows XP SP2 (or later), the following information may appear in browser.

    "To help protect your security, Internet Explorer has restricted this file from showing active content that could access your computer.
    Click here for options..."

    1. Click the Information Bar.
       The shortcut menu appears.
    2. Click [Allow blocked content].
       The security alert dialog box appears.
    3. Click [Yes] on dialog box.

The menu fails to appear:

- ❑ Is your system Windows XP or later, or Windows 2003 or later?
  - → The Autorun menu is supported by Windows XP/Windows 2003 or later.
  - → If your system runs on Windows 2000, you need to setup IE6.0 before using the menu.
  - → The menu is not availabe for Windows 2008 server core environment.
- ❑ Is Shift pressed?
  - → Setting the DVD/CD with Shift pressed down cancels the Autorun feature.
- ❑ Is the system in the proper state?
  - → The menu may not appear depending on the system registry setting or the timing to set the DVD/CD. In such a case, eject the disk from the disk drive once and insert it again.

Some menu items are grayed-out:

- ❑ Is your system environment correct?
  - → The menu items are grayed-out when the logon user does not have the authority of the Administrator or the system does not meet the requirements to install the application. Login with the user having the proper authority on the proper system, and try again.

COLLECTING DR. WATSON DIAGNOSTIC INFORMATION

Dr. Watson collects diagnostic information related to application errors. The location to save the information can be specified as you like. For more information, refer to Chapter 5.

MEMORY DUMP

If an error occurs, the dump file should be saved to acquire necessary information.

If you saved the dump to DAT, write down that it is saved as "NTBackup" or "ARCServe" on the label. You can specify the location to save the diagnostic information as you like.. For more information, refer to "Specifying Memory Dump (Debug Information (refer to Chapter 5 for detail)".

IMPORTANT:

- Consult with your service representative before dumping the memory. Dumping the memory while the server is in the successful operation may affect the system operation.
- Restarting the system due to an error may display a message indicating insufficient virtual memory. Ignore this message and proceed. Restarting the system may result in dumping improper data.

Preparing for Memory Dumping

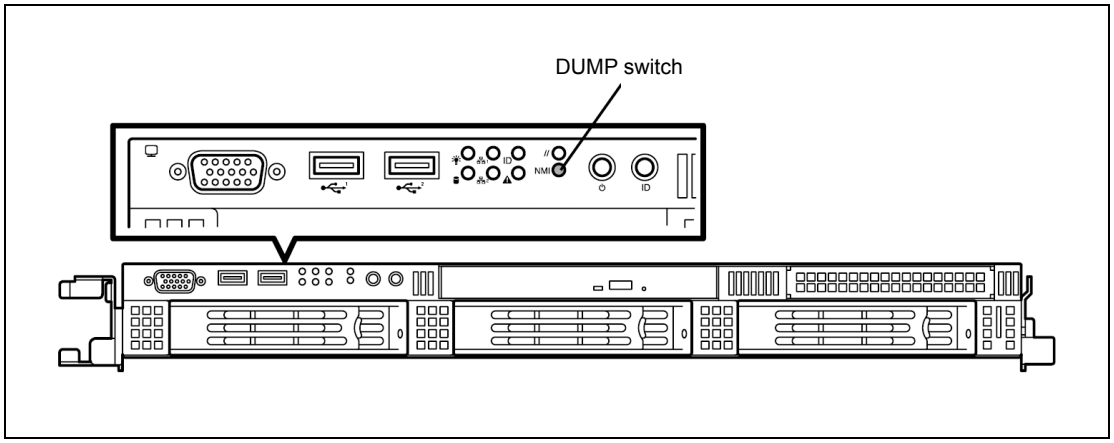
Memory dumping with the DUMP switch may disable the server to restart. In such a case, it is required to force the server to shut down. This forced shutdown, however, is not available if "Enable" is selected for "Power Switch Inhibit" on the Security menu of the BIOS setup utility, SETUP, because this setting disables POWER switch operation.

Follow the procedure below to change the setting to enable the forced shutdown and restart of the server.

1. Power on the server and start the BIOS setup utility, SETUP.
2. Select "Disable" for "Power Switch Inhibit" in the Security menu.
3. Save the configuration data and exit the SETUP.

Saving the Dump File

Press the DUMP switch to save the dump file when an error occurs. Insert a metal pin (a straightened large paper clip will make a substitute) into the switch hole to press the DUMP switch.



Pressing the DUMP switch saves the dump file in the specified directory. (Memory dumping may not be available when the CPU stalls.)

IMPORTANT: Do not use a toothpick or plastic stick that is easy to break.

RECOVERY FOR Windows SYSTEM

If any file necessary for running the OS is damaged, use the following procedures to recover the system.

IMPORTANT:

- After recovering the system, see "Updating the System" in Chapter 5 and be sure to update the system.
  Also, you need to update all the drivers after the system update. For more information, see "Installing and Setting Device Drivers" in Chapter 5.
- If the hard disk drive can not be recognized, you can not recover the system.

For Windows Server 2008

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

For Windows Server 2003 x64 Editions

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

For Windows Server 2003

If the system fails to start for some reason, rebuild the system using the recovery console. Note that this method is recommended for only users and administrators who have a thorough knowledge of the recovery console.

For more information, refer to Online Help.

Maintenance Tools

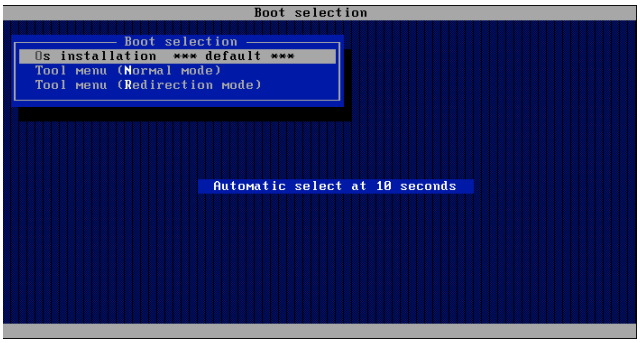
The Maintenance Tools is a tool of this product prevention to maintain, and to analyze the trouble.

Starting Maintenance Tools

The Maintenance Tools is started according to the following procedure.

1. Turn on peripheral devices and the server in this order.
2. Insert the NEC EXPRESSBUILDER DVD supplied with your server into the optical disk drive of your server.
3. Press **Ctrl**, **Alt**, and **Delete** to reboot the server from the NEC EXPRESSBUILDER. (You may also turn off and then on again to reboot the server.)

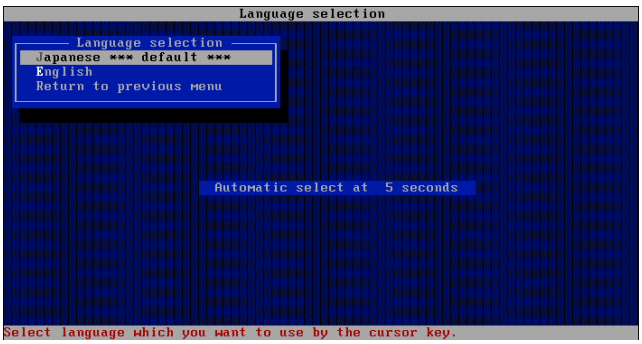
   System boots up displaying Boot selection menu.



IMPORTANT: An initial selection of the menu is "Os installation". "Os installation" starts by the automatic after the Boot selection menu is displayed.

4. When a local console is used, "Tool menu (Normal mode)" is selected.

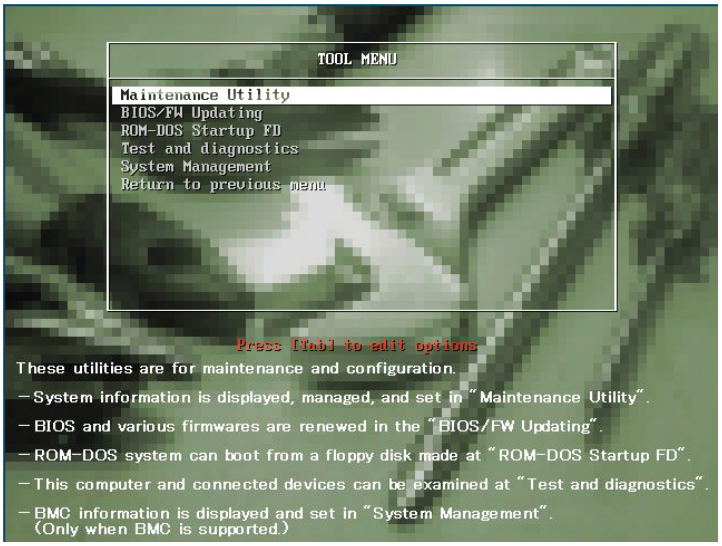
   Moreover, "Tool menu (Redirection mode)" is selected when using it with remote console.


Language selection
Language selection
Japanese *** default ***
English
Return to previous menu
Automatic select at 5 seconds
Select language which you want to use by the cursor key.

IMPORTANT: An initial selection of the menu is "Japanese". "Japanese" starts by the automatic operation when the operation is not done for five seconds after the Language Selection menu is displayed.

5. "English" is selected.

The tool menu is displayed.


TOOL MENU
Maintenance Utility
BIOS/FW Updating
ROM-DOS Startup FD
Test and diagnostics
System Management
Return to previous menu
Press [Tab] to edit options
These utilities are for maintenance and configuration.
－System information is displayed, managed, and set in "Maintenance Utility".
－BIOS and various firmwares are renewed in the "BIOS/FW Updating".
－ROM-DOS system can boot from a floppy disk made at "ROM-DOS Startup FD".
－This computer and connected devices can be examined at "Test and diagnostics".
－BMC information is displayed and set in "System Management".
(Only when BMC is supported.)

When you use a local console

When you use a remote console

6. Each tool is selected, and it starts.

Function of Maintenance Tools

The following functions can be executed in the Maintenance Tools.

- Maintenance Utility

  The Off-line Maintenance Utility is started in Maintenance Utility. The Off-line Maintenance Utility is an OS-independent maintenance program. When you are unable to start the OS-dependent NEC ESMPRO to troubleshoot a problem, the Off-line Maintenance Utility can be used.

  IMPORTANT:

  - The Off-line Maintenance Utility is intended for use of your service representative. The NEC EXPRESSBUILDER DVD you have created contain a file that describes operation of the utility, but do not attempt to use the utility by yourself. Contact your service representative and follow instructions.
  - See the on-line help for details of the Off-line Maintenance Utility. For further information, ask your service representative.

  The Off-line Maintenance Utility provides the following features.

  – IPMI Information Viewer

    Provides the functions to view the system event log (SEL), sensor data record (SDR), and filed replaceable unit (FRU) and to make a backup copy of them.

    Using this feature, you can find system errors and events to determine a maintenance part.

  – BIOS Setup Viewer

    Provides the functions to export the current configuration data defined with the SETUP utility to a text file.

  – System Information Viewer

    Provides the functions to view information on the processor and the BIOS and export it to a text file.

  – System Information Management

    Provides the function to make a back-up copy of your data.

    Without the backup data, the system-specific information and/or configuration may not be restored.

    Only the authorized personnel is allowed to restore the backup data.

  – System Management

    The parameters of BMC (Baseboard Management Controller) are set for remote control and alert.

- BIOS/FW Updating

  This menu allows you to update the software module such as BIOS and firmware of the server by using the update disk (3.5-inch floppy disk) that is distributed from NEC customer service representative.

  After rebooting the system, an update program is started automatically from floppy disk, and the various BIOS and firmware programs are updated.

  IMPORTANT: Do not turn off the server while the update program is running. If the update processing is discontinued, the system becomes unable to start.

- ROM-DOS startup FD

  Creates a support disk for starting the ROM-DOS system.

- Test and diagnostics

  Execute various tests on the server system to check if the server functions are normal and if the connection between the server and additional board is normal.

  After the Test and diagnostics is executed, a system check program assigned to each model starts. See Chapter 7 for details.

- System Management

  The parameters of BMC (Baseboard Management Controller) are set for remote control and alert.

  This menu's function is the same as the "System Management" of the "Maintenance Utility".

Maintenance Tools with Remote Console

This subsection describes the procedures for using Maintenance Tools with remote console.

Maintenance Tools contains the remote console feature that allows the system administrator to set up the server from the management workstation (management PC) via the network or the server's COM B (serial) port.

IMPORTANT:

- Do not use this feature on any other computer than the server, or on any other server obtained without the NEC EXPRESSBUILDER. Doing so may cause a failure of the server.
- Be sure to select [Tool menu (Redirection mode)] in [Boot selection] menu from the remote console.

Starting

The following two methods are available to start the server.

- Running Maintenance Tools from the management PC via LAN
- Running Maintenance Tools from the management PC via direct connection (COM B)

For the procedure for starting Maintenance Tools with Remote Console, refer to the document of NEC ESMPRO Manager.

IMPORTANT:

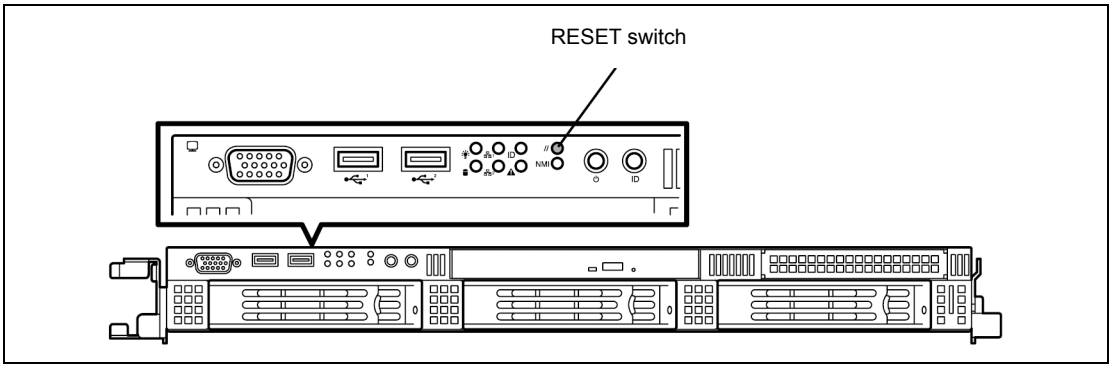
- Do not change the boot device order in BOOT menu in BIOS SETUP. NEC EXPRESSBUILDER cannot be used if the DVD-ROM drive is not the first device to launch the system.
- Use the standard LAN port for LAN connection.
- Use the serial port B for direct connection.
- To use this feature, you need to create a configuration file (3.5-inch floppy disk) that includes communication method between the server and the management PC, and various setup parameters. Use NEC ESMPRO BMC Configuration or NEC ESMPRO Agent Extension. Save the configuration file into the root directory of the floppy disk as the following file name.
  – File name: CSL_LESS.cfg
- If you exit the BIOS SETUP by unusual way (e.g., forced power-off or reset), the redirection process may fail. In such a case, setup again by using the configuration file.
- On Windows Server 2008, you need to open Device Manager, disable the COM port, and reboot the system to use the direct connection through COM port.

NOTE: The following items of BIOS setup information will be set as shown below.

- LAN Controller: [Enabled]
- Serial Port A: [Enabled]
  - Base I/O Address: [3F8]
  - Interrupt: [IRQ 4]
- Serial Port B: [Enabled]
  - Base I/O Address: [2F8]
  - Interrupt: [IRQ 3]
- BIOS Redirection Port: [Serial Port B]
- Baud Rate: [19.2K]
- Flow Control: [CTS/RTS]
- Console Type: [PC ANSI]

RESETTING THE SERVER

- If the server halts before starting the OS, press and hold **Ctrl** and **Alt** and press **Delete**. This restarts the server.
- Pressing the RESET switch on the front panel reboots the server.

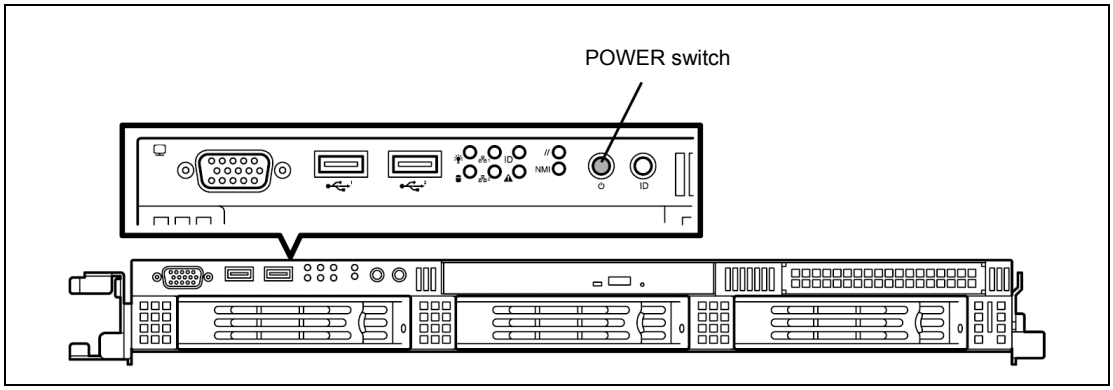


IMPORTANT: Resetting the server clears the DIMM memory and the data in process. To reset the server when it is not frozen, make sure that no processing is in progress.

FORCED SHUTDOWN

Use this function when an OS command does not shut down the server, the POWER switch does not turn off the server, or resetting does not work.

Press and hold the POWER switch on the server for at least four seconds. The power is forcibly turned off. To turn on the power back again, wait approximately 30 seconds after turning off the power (forced shutdown).



IMPORTANT: If the remote power-on function is used, cycle the power once to load the OS, and turn off the power again in the normal way.

(This page is intentionally left blank.)

Chapter 9

Upgrading Your Server

This chapter describes internal optional devices available for the server, procedures for install or removing such optional devices, and notes on using them.

IMPORTANT:

- Optional devices described in this chapter may be installed or removed by any user. However, NEC does not assume any liability for damage to optional devices or the server or malfunctions of the server resulted from installation by the user. NEC recommends you ask your service representative for install or removing any optional devices.
- Make sure to use only optional devices and cables authorized by NEC. Repair of the server due to malfunctions, failures, or damage resulted from installing such devices or cables will be charged.
- For the Windows Server operating system user:
  When you made any change to the hardware configuration, make sure to update the system (see Chapter 5 for details.).

SAFETY NOTES

Observe the following notes to install or remove optional devices safely and properly.

⚠ WARNING

Observe the following instructions to use the server safely. Failure to follow these instructions may result in death or serious personal injury. See pages 1-3 to 1-12 for details.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery.
- Disconnect the power plug before working with the server.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

- Do not lift the server only by a single person.
- Make sure to complete board installation.
- Do not install the server on the rack leaving the cover removed.
- Do not install the server on the rack halfway.
- Do not pinch your fingers with mechanical component.
- Avoid installation in extreme temperature conditions.

ANTI-STATIC MEASURES

The server contains electronic components sensitive to static electricity. Avoid failures caused by static electricity when installing or removing any optional devices.

- Wear a wrist strap (an arm belt or anti-static glove).

  Wear a wrist strap on your wrist. If no wrist strap is available, touch an unpainted metal part of the cabinet before touching a component to discharge static electricity from your body.

  Touch a metal part regularly when working with components to discharge static electricity.

- Select a suitable work space.
  - Work with the server on the anti-static or concrete floor.
  - When you work with the server on a carpet where static electricity is likely to be generated, make sure take anti-static measures beforehand.
- Use a work table.

  Place the server on an anti-static mat to work with it.

- Cloth
  - Do not wear a wool or synthetic cloth to work with the server.
  - Wear anti-static shoes to work with the server.
  - Take off any jewels (a ring, bracelet, or wrist watch) before working with the server.
- Handling of components
  - Keep any component in an anti-static bag until you actually install it to the server.
  - Hold any component by its edge to avoid touching any terminals or parts.
  - To store or carry any component, place it in an anti-static bag.

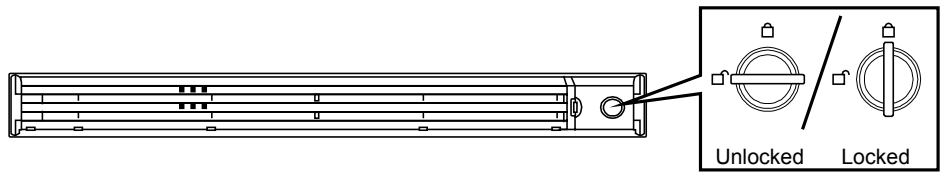
PREPARING FOR INSTALLATION AND REMOVAL

Follow the procedure below to prepare for installing or removing components.

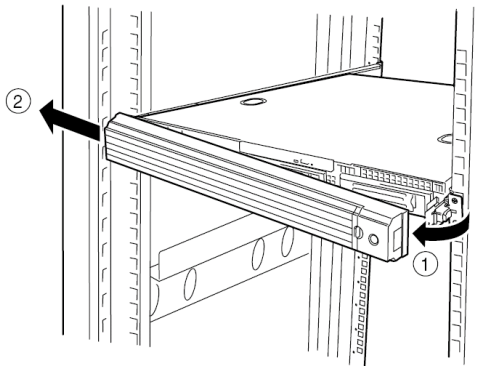
1. Shutdown the OS.

   Shutdown process is not required if the hard disk drives and the additional power supply units are hot-swappable.

2. Unlock the front bezel with the security key.



3. Remove the front bezel from the chassis.



4. Press the POWER switch to power off the server (the POWER LED goes off).
5. Remove all cables and power cords from the server.

   Prepare a Phillips screwdriver to install or remove the component.

The server needs to be pulled out from the rack for installing/removing any internal components other than the hard disk drives and power supply units.

⚠ CAUTION

Observe the following instructions to use the server safely. Failure to follow these instructions may cause a fire, personal injury, or property damage. See pages 1-3 to 1-12 for details.

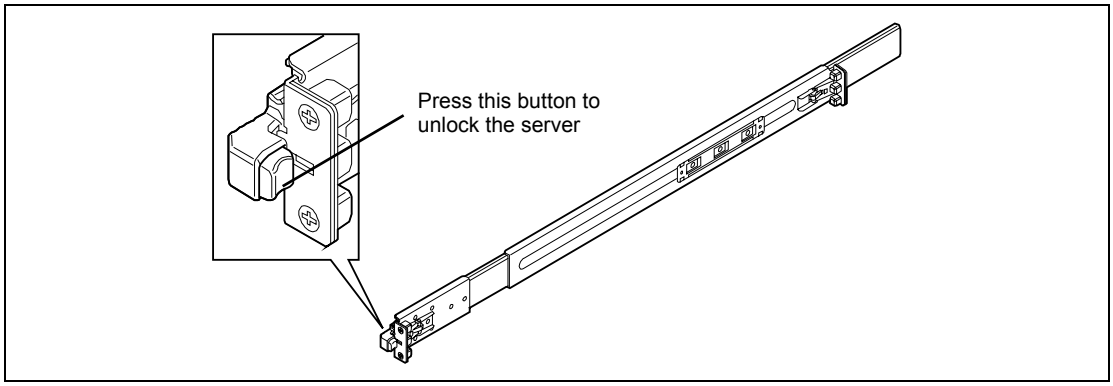
- Do not install the server on a rack with leaving covers removed.
- Do not pinch your finger with mechanical components.
- Note high temperature.
- Do not pull out a device from the rack if the rack is unstable.
- Do not leave more than one device being pulled out from the rack.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.

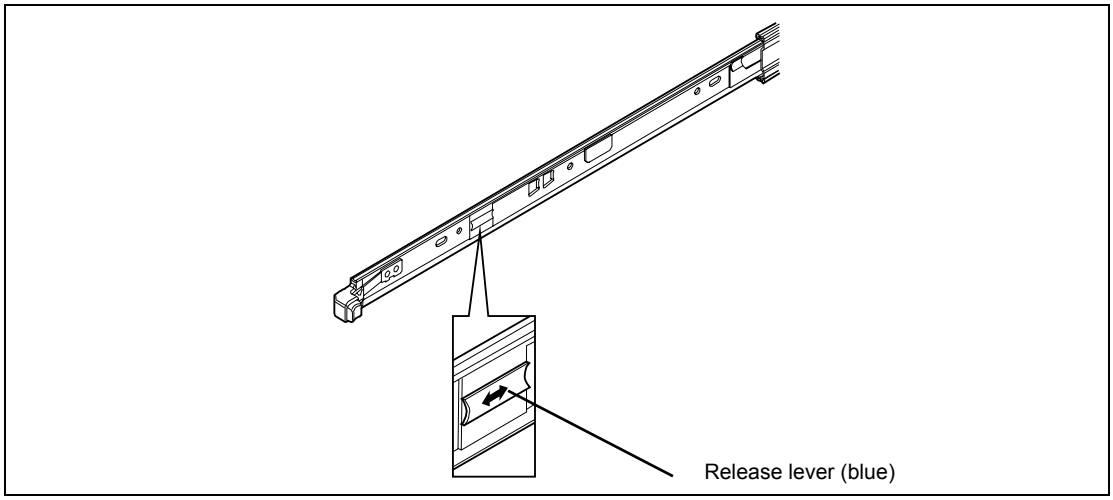
> **NOTE:** To confirm the device you are going to maintain, use the UID switch and the UID LED that goes on when the switch is pressed.

2. Loosen the unlock buttons at the right and left sides of the front panel, and slowly pull out the server from the rack.

   The server is locked while you are pulling it. Stop pulling when it is locked.



To place the server in the rack, push it back into the rack while pushing the right and left release levers (blue) forward or rearward.



> **IMPORTANT:** Be very careful not to get your finger caught in the levers or rails.

HARD DISK DRIVE

The hard disk drive bay at the front of the server chassis may contain hard disk drives of approximately 25.4 mm (1 inch) high.

The disk interface, number and size of hard disk drives depend on server model, as described below. The IDs of hard disk drive (channel numbers or port numbers) are also predefined.

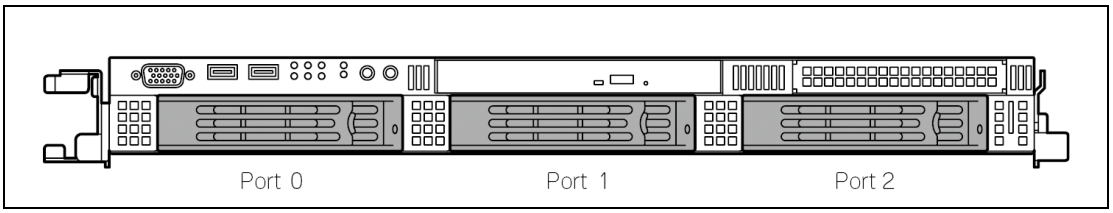
3.5-inch Disk Model

SATA hard disk drive

The Onboard RAID Controller (LSI Embedded MegaRAID) or optional RAID Controller (N8103-116A/117A/118A) supports serial ATA (SATA) interface. Up to three hard disk drives (mounted on the dedicated 3.5-inch width tray) can be installed.

IMPORTANT: Use the hard disk drives authorized by NEC. Installing a third-party hard disk drive may cause a failure of the server as well as the hard disk drive. Purchase hard disk drives of the following models:

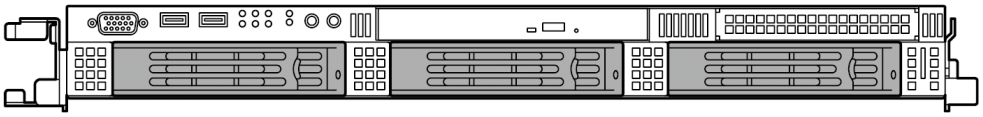
– N8150-209A (250GB, 7200rpm, SATA2/300)
– N8150-274 (500GB, 7200rpm, SATA2/300)
– N8150-275 (750GB, 7200rpm, SATA2/300)
– N8150-263 (1TB, 7200rpm, SATA2/300)



SAS hard disk drive

Can be used only when the optional RAID Controller (N8103-116A/117A/118A) is installed. Up to three hard disk drives (mounted on the dedicated 3.5-inch width tray) can be installed.

> **IMPORTANT:** Use the hard disk drives authorized by NEC. Installing a third-party hard disk drive may cause a failure of the server as well as the hard disk drive. Purchase hard disk drives of the following models:
> – N8150-200 (73.2GB, 15000 rpm, SAS)
> – N8150-201 (146.5GB, 15000 rpm, SAS)
> – N8150-226 (300GB, 15000 rpm, SAS)
> – N8150-245 (450GB, 15000 rpm, SAS)



The hard disk drive bays are connected to the Mini SAS connector on the mother board.
To use the hard disk drives in a RAID System, refer to:

- When using the Onboard RAID Controller (LSI Embedded MegaRAID):

  Use LSI Software RAID Configuration Utility or Universal RAID Utility to build, configure, and manage the RAID System.

  See "RAID System Configuration" in Chapter 4 and "Universal RAID Utility" in Chapter 6.

- When using an optional RAID Controller (N8103-116A/117A/118A):

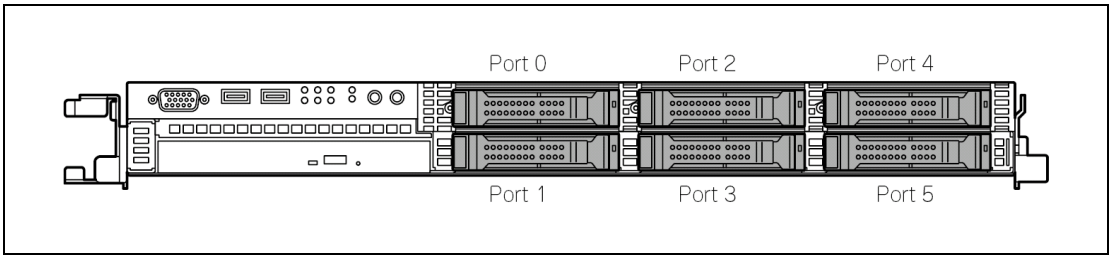
  Use WebBIOS or Universal RAID Utility to build, configure, and manage the RAID System.

  Refer to the manual coming with the optional RAID Controller, or see "Universal RAID Utility" in Chapter 6.

2.5-inch Disk Model

The Internal RAID Controller (equivalent to N8103-116A) supports SAS interface. Up to six hard disk drives (mounted on the dedicated 2.5-inch width tray) can be installed.

IMPORTANT: Use the hard disk drives authorized by NEC. Installing a third-party hard disk drive may cause a failure of the server as well as the hard disk drive. Purchase hard disk drives of the following models:
– N8150-255 (73.2GB, 10000rpm , SAS)
– N8150-256 (146.5GB, 10000rpm, SAS)
– N8150-268 (300GB, 10000rpm, SAS)
– N8150-257 (36.3GB, 15000rpm, SAS)
– N8150-258 (73.2GB, 15000rpm, SAS)
– N8150-269 (146.5GB, 15000rpm, SAS)



The hard disk drive bays are connected to the Internal RAID Controller (equivalent to N8103-116A).

- When using the Internal RAID Controller (equivalent to N8103-116A):

  Use WebBIOS or Universal RAID Utility to build, configure, and manage the RAID System.

  See "RAID System Configuration" in Chapter 4 and "Universal RAID Utility" in Chapter 6.

A dummy tray is installed in the hard disk drive bays except for Port 0. The purpose of a dummy tray is to increase the cooling effect in the server. Install a dummy tray in slots not containing a hard disk drive.

Installation

Take the following steps to install a hard disk drive. This procedure applies to all the hard disk drive bays. See the next section for the procedure installing a hard disk drive in the flex bay.

NOTE: Any hard disk drive can be installed or removed in or from the server only by removing the front bezel.

IMPORTANT:

- In the RAID System, use the hard disk drives having the same specification including the capacity.
- Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.

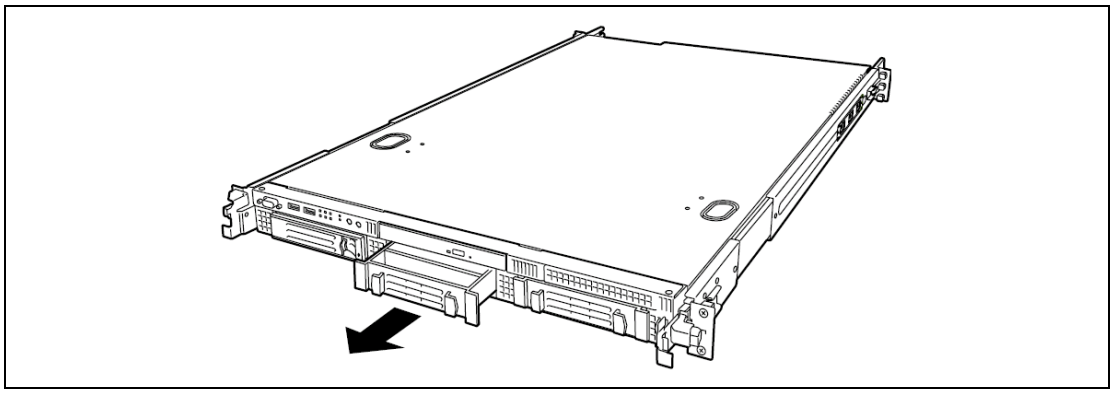
3.5-inch Hard Disk Drive

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Unlock the front bezel with the security key and remove the front bezel.
3. Locate the slot in which you are going to install a hard disk drive.

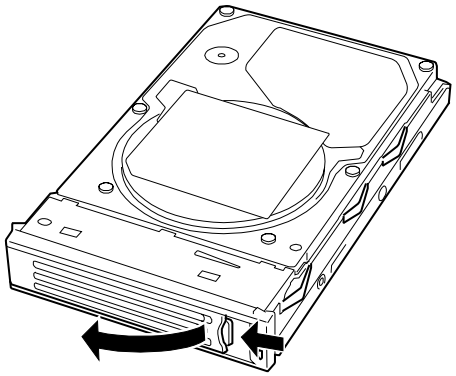
   The server has three slots. Install the hard disk drives from the left vacant slot.
4. Remove the dummy tray.

IMPORTANT:

- Keep the dummy tray for future use.
- The purpose of a dummy tray is to increase the cooling effect in the server. Install a dummy tray in slots not containing a hard disk drive.



5. Unlock the hard disk drive handle.

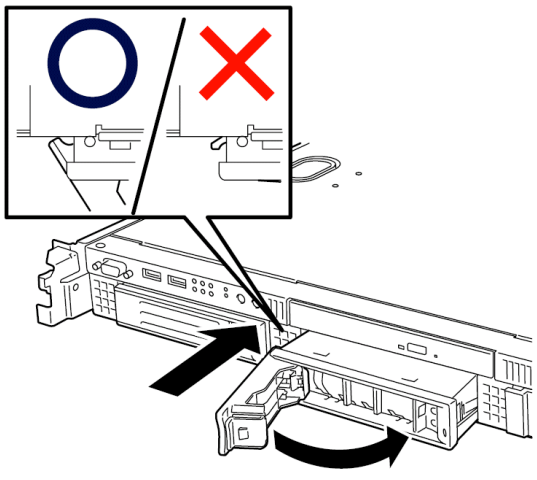


6. With the handle in the fully open position, firmly hold the drive carrier and handle, and insert it into the chassis.

IMPORTANT:

- Do not push on the handle until the handle begins to close by itself.
- Carefully hold the hard disk drive with both hands.
- Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.

NOTE: Confirm that the handle is hooked to the frame when having inserted the hard disk drive.



7. When the handle begins to close by itself , slowly close the handle.

   The drive carrier is locked when a "click" is heard.

   IMPORTANT:

   - Be careful not to get your finger caught between the handle and tray.
   - Push the drive further to check if it is firmly secured.

8. Power on the server, and run SETUP utility.

   Select [Boot] menu to set the boot priority. When you have installed hard disk drive additionally, the boot priority stored in BIOS is cleared. See Chapter 4 for details.

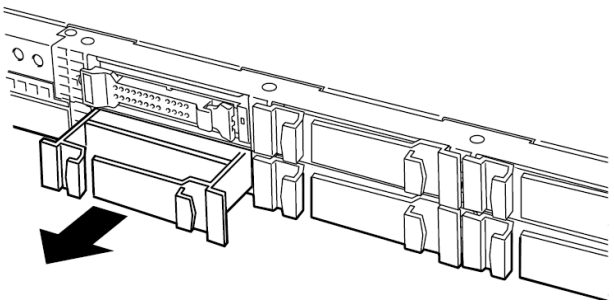
9. Install the front bezel you removed in step 2.

   There are tabs on the left side of the front bezel. Engage the tabs with the server frame, install the front bezel, and lock it with the security key.

2.5-inch Hard Disk Drive

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Locate the slot in which you are going to install a hard disk drive.

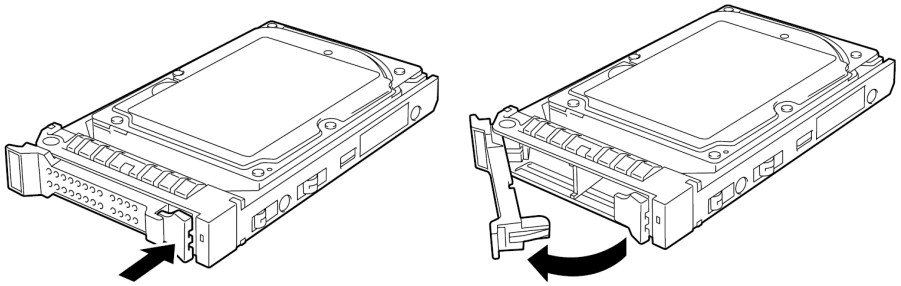
   The server has six slots. Fill the vacant slots with hard disk drives from the lower port number.
3. Remove the dummy tray or drive carrier if installed.



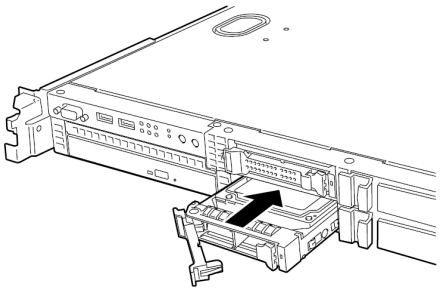
IMPORTANT:

- Keep the dummy tray for future use.
- The purpose of a dummy tray is to increase the cooling effect in the server. Install a dummy tray in slots not containing a hard disk drive.

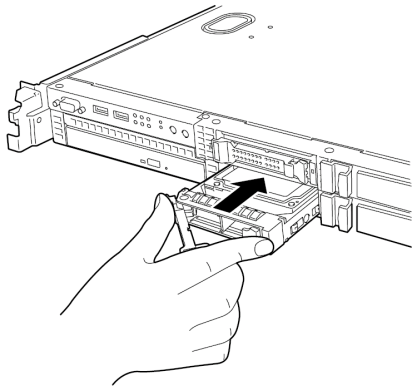
4. Unlock the hard disk drive handle.



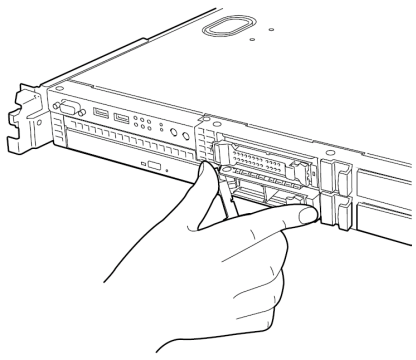
5. Firmly hold the drive carrier, and insert it into the slot.



6. Put your fingers on the front of the drive carrier.



7. Push the drive carrier into the slot until it stops.



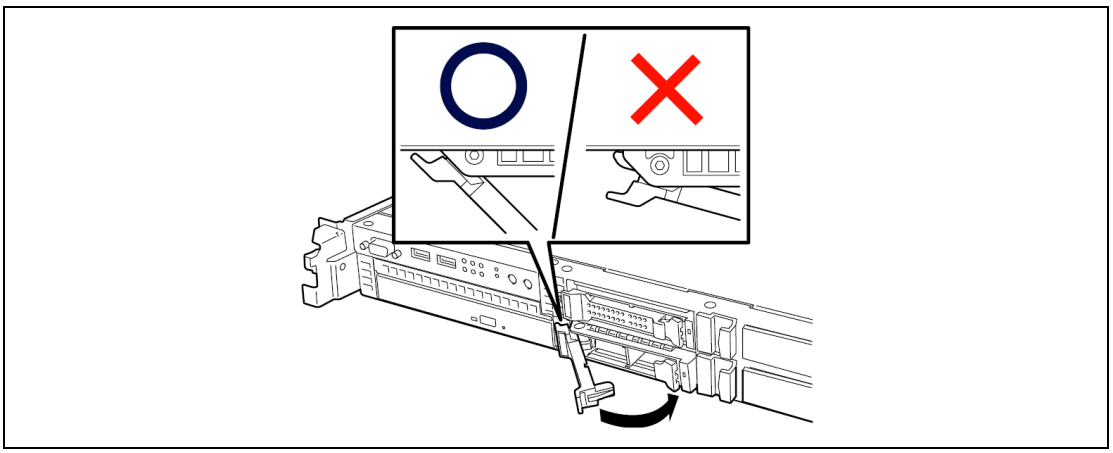
IMPORTANT:

- Confirm that the handle is hooked to the frame when having inserted the hard disk drive.
- Be careful not to get your finger caught between the handle and tray.

NOTE: The hard disk drive bay is located close to the POWER switch. Pay attention not to press the POWER switch when installing/removing the hard disk drive. If the POWER switch is pressed by mistake, the system starts shutdown process.

8. Slowly close the handle.

The drive carrier is locked when a "click" is heard.



IMPORTANT:

- Be careful not to get your finger caught between the handle and tray.
- Push the drive further to check if it is firmly secured.

NOTE: Confirm that the handle is hooked to the frame when having inserted the hard disk drive.

9. Power on the server, and run SETUP utility.

Select [Boot] menu to set the boot priority. When you have installed hard disk drive additionally, the boot priority stored in BIOS is cleared. See Chapter 4 for details.

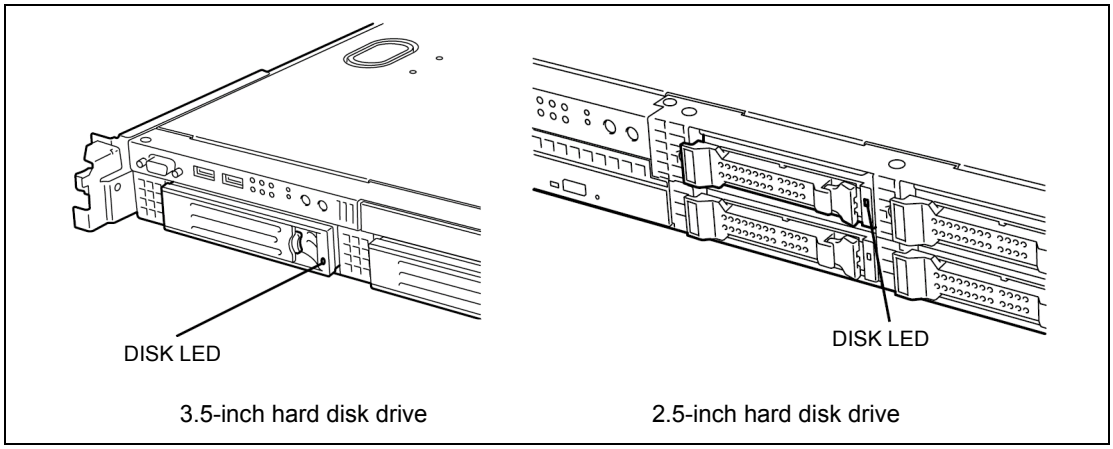
10. Install the front bezel you removed in step 2.

There are tabs on the left side of the front bezel. Engage the tabs with the server frame, install the front bezel, and lock it with the security key.

Removal

Take the following steps to remove a hard disk drive:

NOTE: If removing a failing hard disk drive, confirm the slot in which the DISK LED of the hard disk drive is amber before starting the removal.

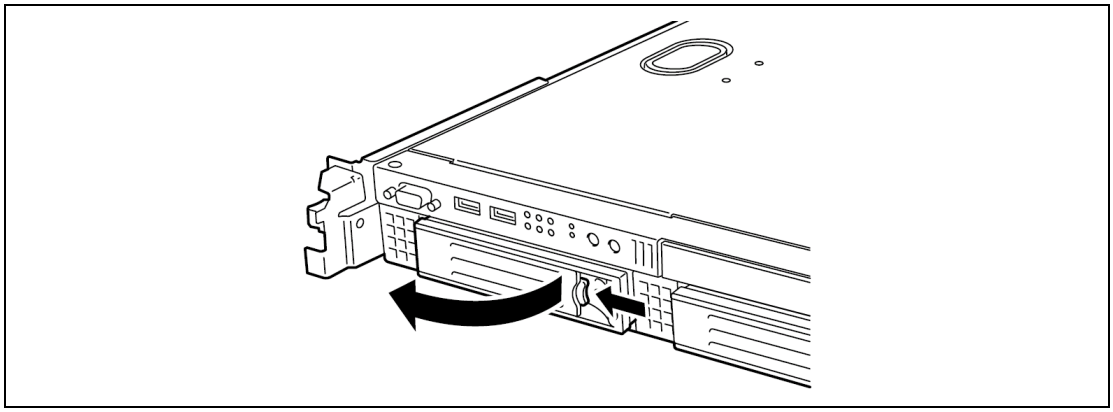


3.5-inch hard disk drive 2.5-inch hard disk drive

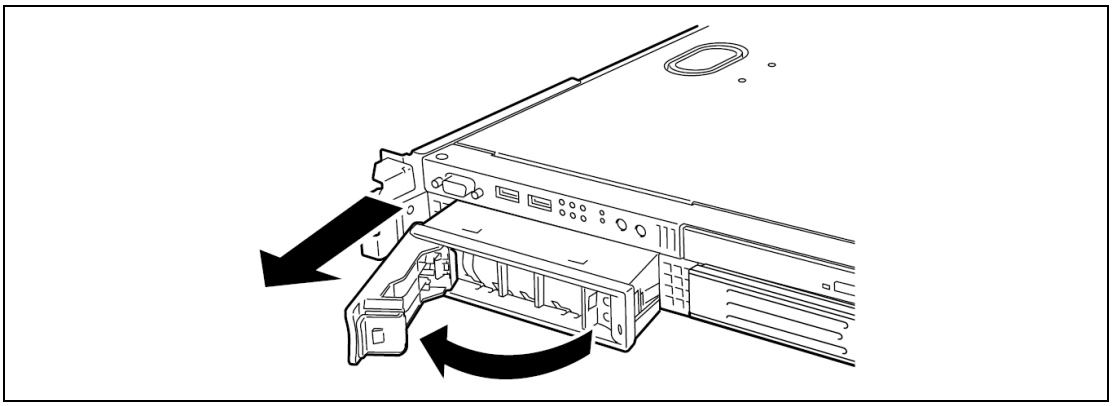
3.5-inch Hard Disk Drive

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Unlock the front bezel with the security key, and remove the front bezel.
3. Push the lever to unlock, and open the handle.

IMPORTANT: Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.



4. Firmly hold the handle and hard disk drive, and pull out the hard disk drive.
5. If using the server with the hard disk drive removed, install the dummy tray in the vacant slot to ensure the cooling efficiency.

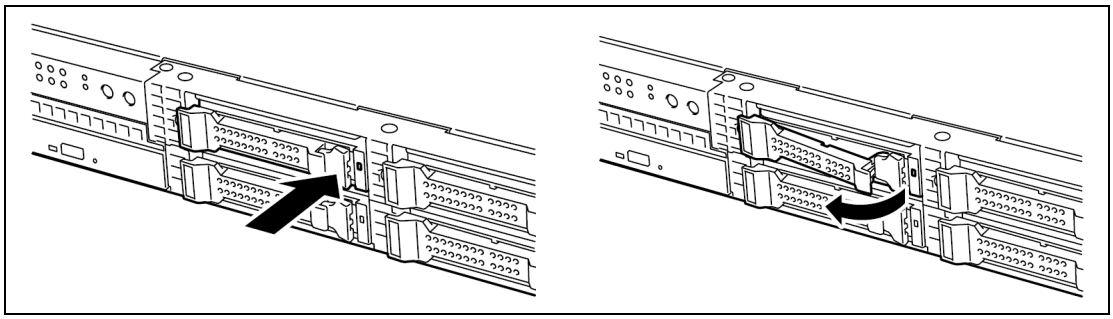


6. Install the front bezel you removed in step 2.

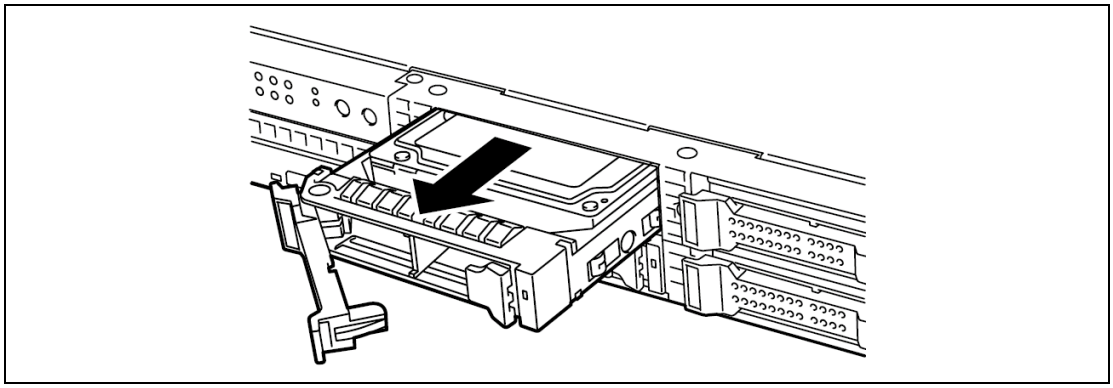
2.5-inch Hard Disk Drive

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Unlock the front bezel with the security key, and remove the front bezel.
3. Push the lever to unlock, and open the handle.

IMPORTANT: Do not press the POWER switch during the installation or removal of the hard disk drive if your server is running.



4. Firmly hold the handle and hard disk drive, and pull out the hard disk drive.
5. If using the server with the hard disk drive removed, install the dummy tray in the vacant slot to ensure the cooling efficiency.



6. Install the front bezel you removed in step 2.

Notes on Replacing Hard Disk Drives in the RAID System

When the hard disk drives are in the RAID System, you can restore the state before an error using the auto-rebuild feature that stores the data in the old hard disk drive into a new one.

The auto-rebuild feature is available for the RAID1, RAID5, RAID6, RAID10, or RAID50.

Auto-rebuild is carried out when you hot-swap a failed hard disk drive with a new one (replace the disk while the server is powered). While auto-rebuild is in progress, the DISK LED flashes green and amber alternatively to indicate it.

IMPORTANT:

- When auto-rebuild fails, the DISK LED lights in amber. Remove and install the hard disk drive again to restart auto-rebuild.
- If the RAID System management utility is installed, it may display or act as follows. If the DISK LED does not light in amber after auto-rebuild, however, auto-rebuild has completed successfully.
  - Displays "Rebuild was cancelled" on the screen while auto-rebuild is in progress.
  - Appears to stop and restart auto-rebuild.

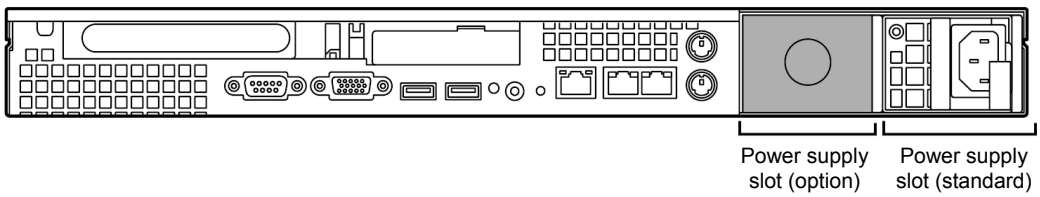
Observe the following notes for auto-rebuild.

- Do not power off the server in the period between a hard disk drive error and completion of auto-rebuild.
- When you removed a hard disk drive, wait at least 90 seconds before installing the hard disk drive back again.
- Do not replace another hard disk drive while rebuilding is in progress. (The DISK LED flashes in green and amber alternatively while rebuilding the hard disk drive.)

POWER SUPPLY UNIT

Your server contains one or two power supplies.

The second power supply is optional and provides a redundant configuration that ensures continued operation of the system in the unlikely event one of the power supplies fails.



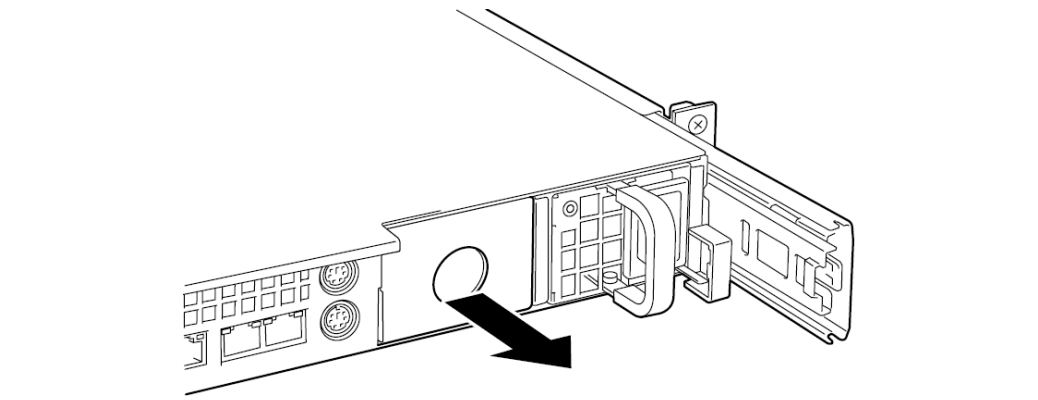
Installation

Take the following steps to install a power supply unit:

1. See the section "Preparing for Installation and Removal" described earlier to prepare.

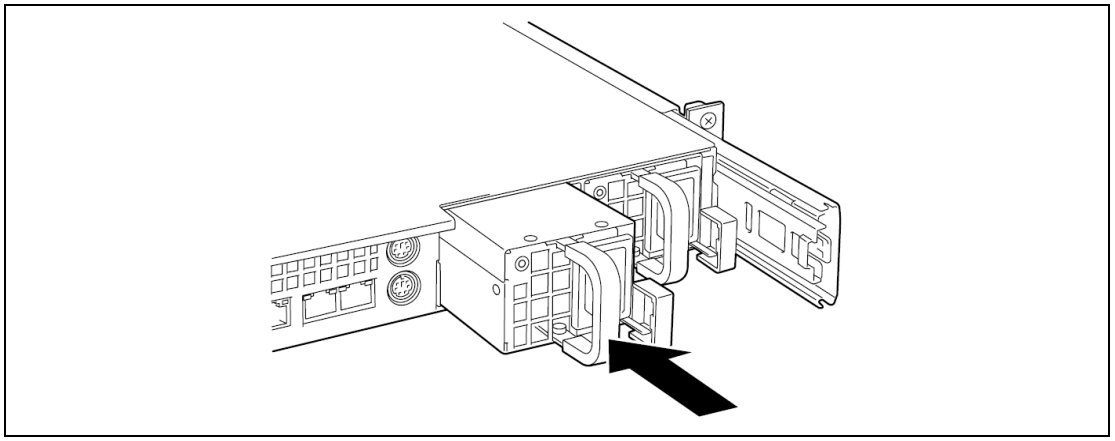
> **IMPORTANT:** Be sure to turn off the power. Failure to do so causes the server to malfunction or fail.

2. Remove the blank cover.

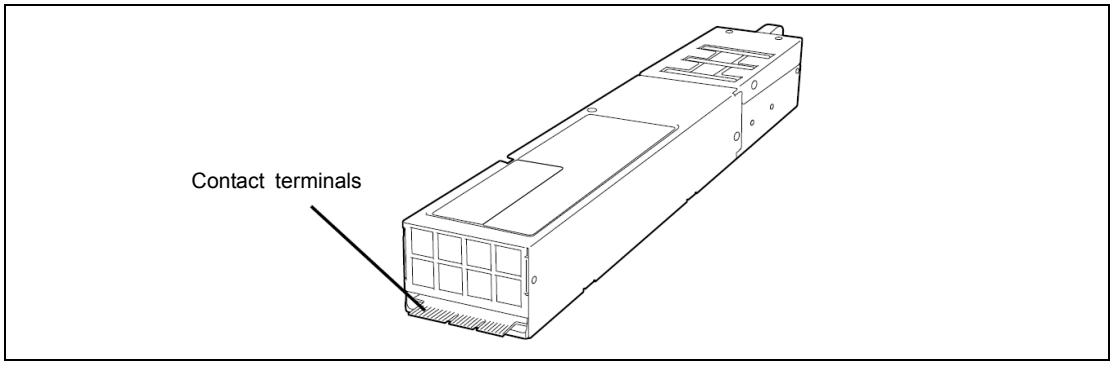


> **IMPORTANT:** Keep the removed blank cover for future use.

3. Insert the power supply unit.

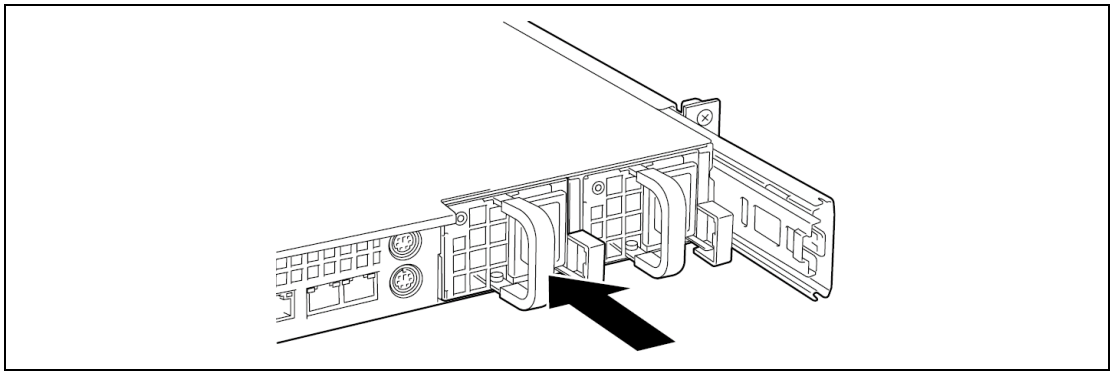


IMPORTANT: Do not touch the terminals of the power supply unit.



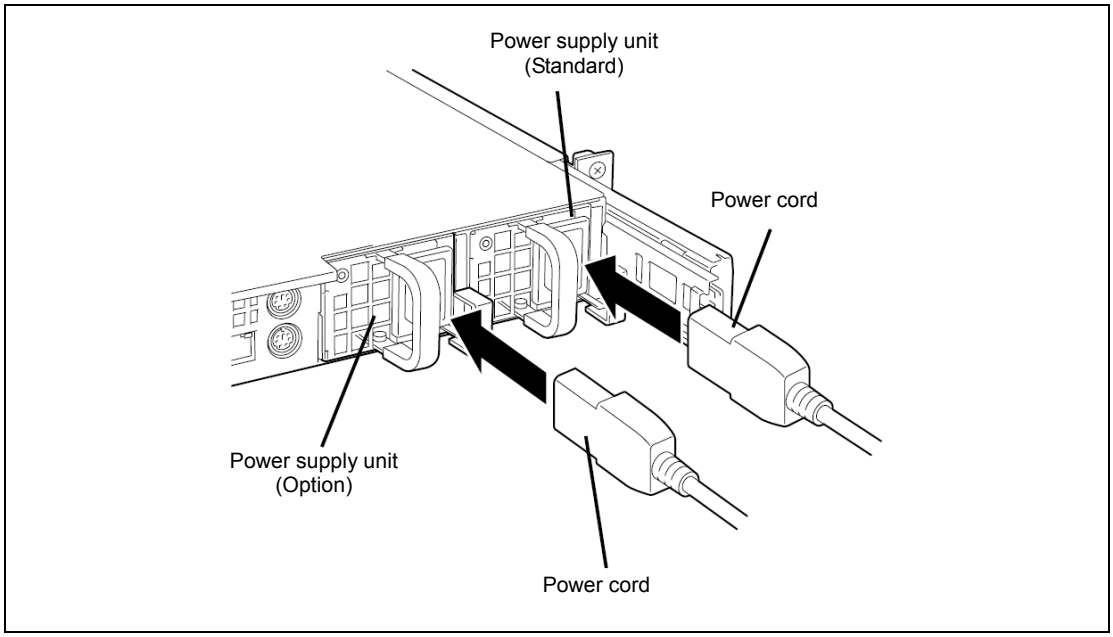
4. Grasp the handle and firmly push the power supply.

The power supply unit is locked when a distinct "click" is heard.



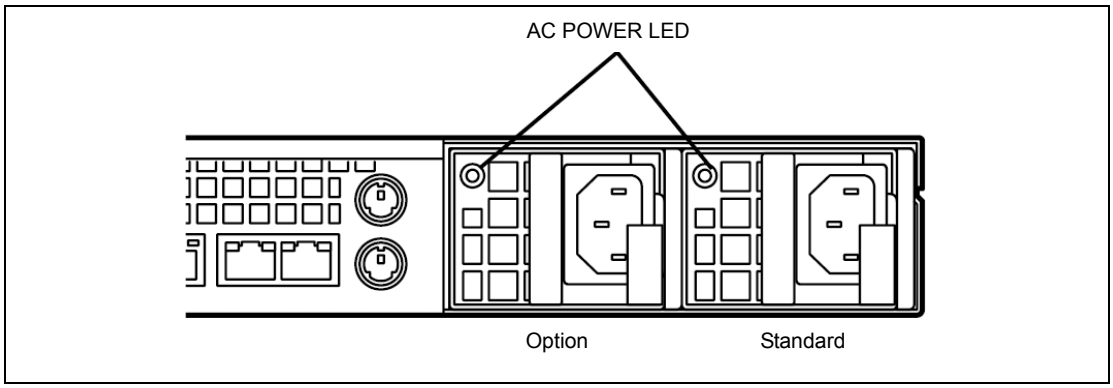
5. Connect two power cords.

Use the power cord provided with the standard power supply unit and the one provided with the system. The AC POWER LEDs flash when the power cords are connected.



6. Power on the server.

The AC POWER LEDs go on.



7. Confirm, by the STATUS LED or on the POST screen, that there are no errors related to the power supply units.

See Chapter 8 for details on the error messages.

If the AC POWER LEDs are off, reinstall the power supply units. If the same error message still appears, contact your sales representative.

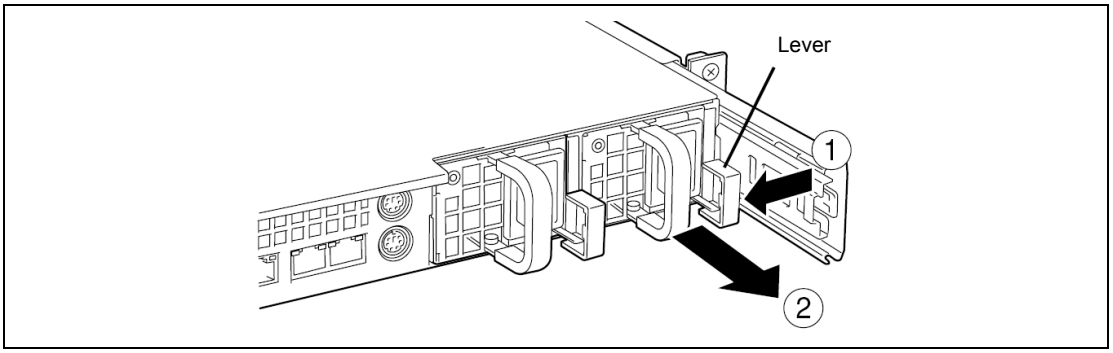
Replacing a Failing Power Supply Unit

Replace only a failing power supply unit.

IMPORTANT: Do not remove a power supply unit operating normally.

NOTE: If one power supply unit fails while the server contains two power supply units in a redundant configuration, the failing power supply unit can be replaced with the system operating (power-on state). (Skip step 2.)

1. Locate the failing power supply unit by the AC POWER LED on the rear of each power supply unit. (The LED of the failing power supply unit is amber.)
2. Shutdown the system, and press the POWER switch to turn off the power.
3. Disconnect the power cord from the failed power supply.
4. Hold the handle of the failing power supply.
5. While pressing the lever, pull the power supply to remove if from the chassis.



6. If operating the server with a single power supply unit without installing a new one, install the cover you removed in step 3 of installation procedure.

IMPORTANT: To maintain the cooling effect in the server, install the blank cover in the vacant slot.

7. Install the new power supply unit taking steps 4 to 8 of "Installation", and confirm that the power supply unit is installed normally.

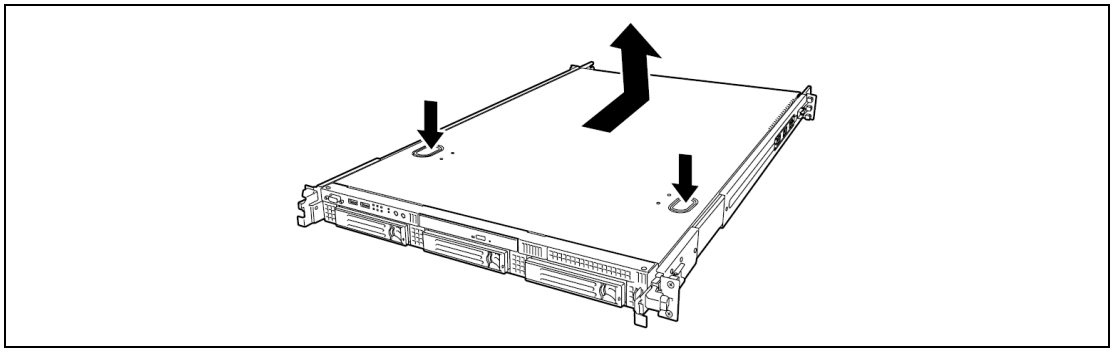
NOTE: If one of the two power supply units of the server is replaced while the power is on, the POWER LED of the new power supply unit goes on. (If it is replaced while the power is off, the LED flashes. The LED goes on when the power is turned on.)

TOP COVER

Open the top cover when installing/removing a processor, or reconnecting an internal cable.

Removal

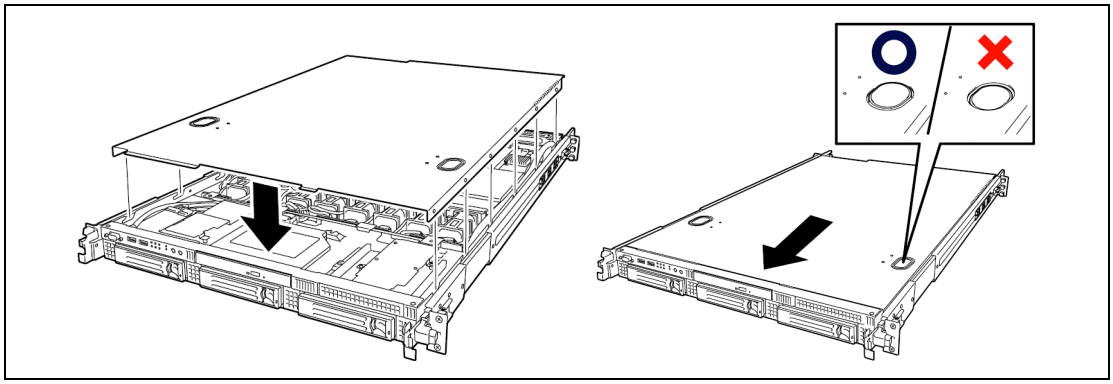
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Slide the top cover toward the rear of the server while pressing the lock button on the cover.
4. Lift off the top cover from the server.



Installation

When installing the top cover, confirm that the tab of the cover is securely inserted into the slot in the server frame. Slide the top cover toward the rear of the server. The top cover is locked when a distinct "click" is heard. At this time, check the release button for normal state.

NOTE: The system must be operated with the top cover installed to ensure proper cooling.



DIMM

Install the additional DIMM (Dual Inline Memory Module) to the DIMM socket on the mother board in the server. The mother board is provided with 12 DIMM board slots.

NOTE: Up to 96GB of memory (8GB DIMM × 12) can be installed. (The factory-installed DIMMs need to be replaced in this case.) Two DIMMs of 1GB are factory-installed in CPU1-DIMM1 and CPU1-DIMM2 (in standard configuration).

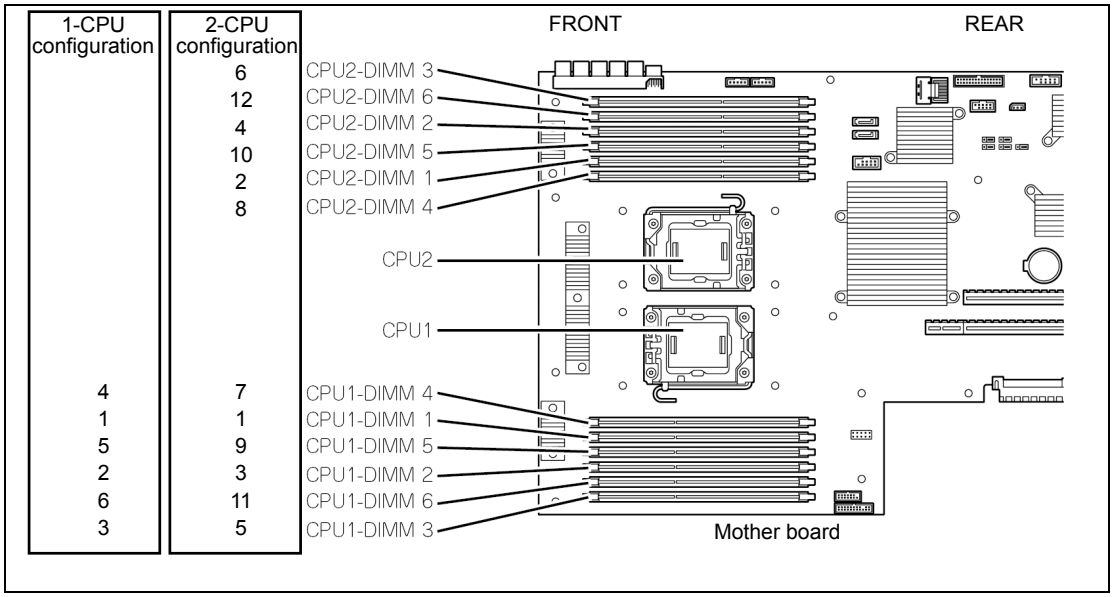
IMPORTANT:

- The DIMM is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the DIMM. Do not touch the DIMM terminals or on-board parts by a bare hand or place the DIMM directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Make sure to use the DIMM authorized by NEC. Installing a third-party DIMM may cause a failure of the DIMM as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.
  Purchase DIMMs of the following models:
  – N8102-326 Additional 1-GB memory board
  – N8102-327 Additional 2-GB memory board
  – N8102-328 Additional 4-GB memory board
  – N8102-329 Additional 8-GB memory board

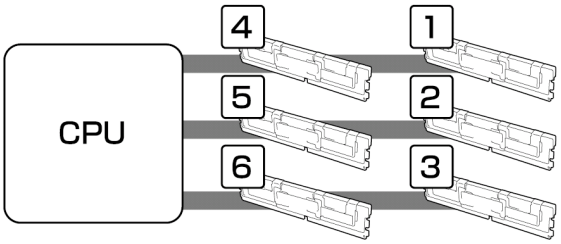
Installation Order

Installation order depends on the number of CPUs installed.

- 1-CPU configuration:
  Install DIMMs starting from the smallest slot number.
- 2-CPU configuration:
  Alternately install DIMMs starting from the smallest slot number of each CPU.
- Install DIMMs starting from the largest capacity and from the smallest slot number (8GB → 4GB → 2GB → 1GB).



IMPORTANT: If CPU2 is not installed, CPU2_DIMM1 through CPU2_DIMM6 are not available.



NOTE: Memory mirroring and LockStep (x8 SDDC) features are optional. Contact your service representative for details. For configuration, see "Using the Memory RAS Features" described later.

The factory-installed two 1-GB DIMMs and additional 1-GB memory board is unavailable for x4 SDDC feature. To use x4 SDDC feature, additional 2-GB/4-GB/8-GB memory board is required.

Memory Clock

Memory clock speed depends on CPU model and whether the additional 8-GB memory board is installed or not.

- Xeon E5502/E5504

  Always operates at 800MHz regardless of DIMM type.

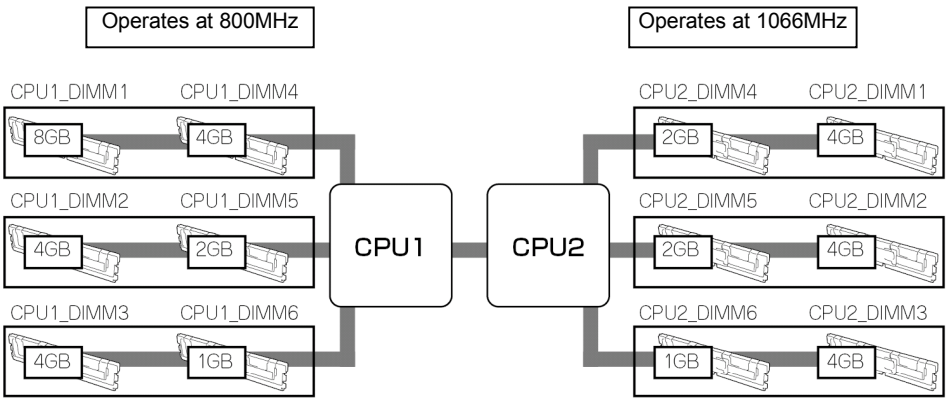
- Xeon E5520/X5550/X5570

  Operates at 800MHz when the following conditions are satisfied. In other cases, operates at 1066MHz. The memory clock is stationary for each CPU.

  <Condition>

  Additional 8-GB memory board is installed and each CPU has four or more DIMMs installed.

  <Example>



Memory RAS Feature

The server supports memory mirroring and LockStep (x8 SDDC) features as memory RAS feature. They are optional. Contact your service representative for details. For configuration, see "Using the Memory RAS Features" described later.

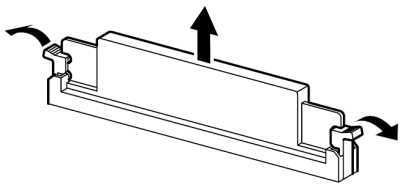
To use x4 SDDC feature, you need to remove the factory-installed DIMMs and install 2GB/4GB/8GB DIMMs.

Installation

Install a DIMM in the following procedure.

IMPORTANT: The server supports DIMMs of only the low-profile type (30 mm (1.2 inches) in height). It does not support DIMMs exceeding the specified height.

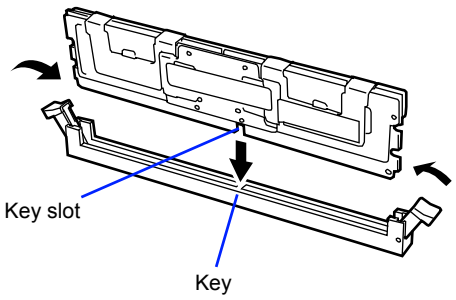
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Locate the DIMM socket which you are going to install DIMM.
5. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position.
6. Open levers at left and right side of the DIMM socket, and remove the dummy memory.



IMPORTANT: Keep the removed dummy memory for future use.

7. Holding the DIMM by the edges, remove it from its anti-static package.
8. Position the DIMM above the socket. Align the small notch at the bottom edge of the DIMM with the key in the socket.

NOTE: Make sure of the orientation of the DIMM.
Position the DIMM so that a notch in the bottom edge of the DIMM aligns with the keyed socket. Applying too much pressure can damage the socket. Keyed DIMMs insert only one way.



9. Insert the bottom edge of the DIMM into the socket.
10. When the DIMM is inserted, push down on the top edge of the DIMM until the retaining clips snap into place.

IMPORTANT:

- To avoid damage to the socket, do not apply excessive force while pressing the DIMM.
- Make sure the clips are firmly in place.

11. Install the components you removed in steps 1 to 3.
12. Power on the server and verify that POST displays no error messages.

    If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.
13. Run the BIOS SETUP utility and select [Advanced] → [Memory Configuration] to verify that the installed DIMM shows the status "Normal". (See Chapter 4 or details.)
14. Select "Yes" for [Reset Configuration Data] on the [Advanced] menu.

    This setting is required to change the hardware configuration data. See Chapter 4 for details.
15. If the Windows operating system is in use, set the paging file size to the recommended value (total memory size × 1.5) or a greater value. See Chapter 5 for details.

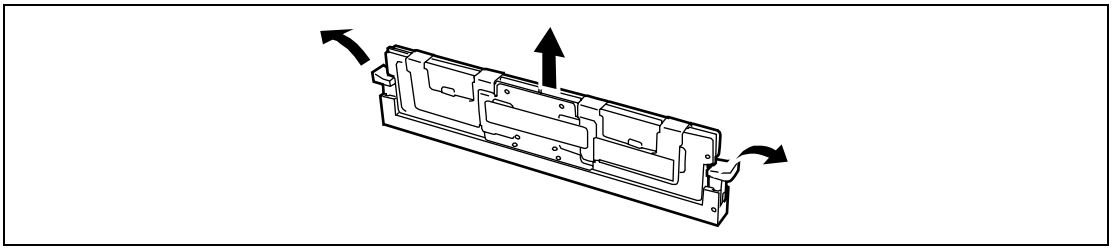
Removal

Remove the DIMM depending on the following procedure.

> **NOTE:** To remove the failed DIMM, check the error message appearing in POST or NEC ESMPRO to identify the DIMM socket (group) in which the failed DIMM is installed.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Open the clips at each end of the socket from which you remove the DIMM.

   The DIMM pops out of the socket



5. Hold the DIMM by the edges, lift it away from the socket, and store it in an anti-static package.
6. Reinstall all parts removed in Steps 3 to 7.

   See installation procedures for detail explanations.
7. Power on the server and verify that POST displays no error messages.

   If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.
8. Start the SETUP and select [Advanced] → [Memory Configuration] → [Memory Retest] → [Enabled] to clear the error information of the removed DIMM. (See Chapter 4 for details.)
9. Select "Yes" for [Reset Configuration Data] on the Advanced menu.

   This setting is required to change the hardware configuration data. See Chapter 4 for details.

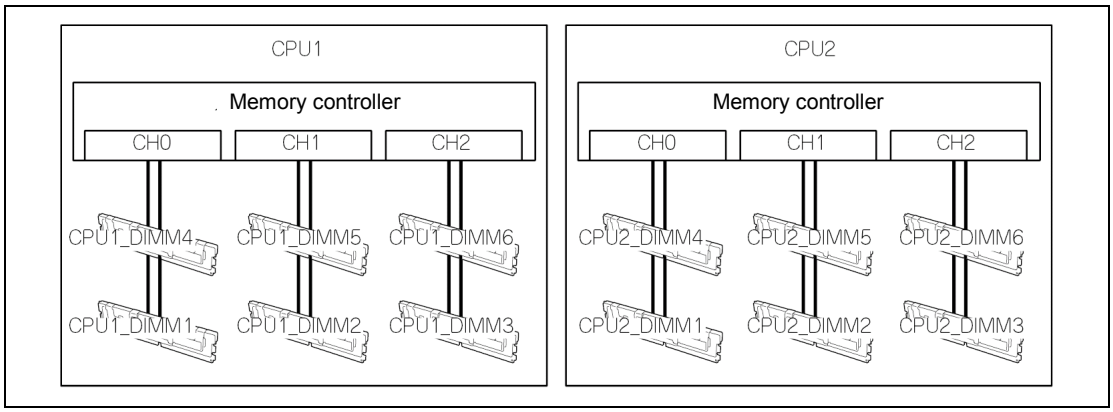
Using the Memory RAS Features

The server has RAS feature including "Standard memory configuration (x4 SDDC ECC memory), "Memory mirroring feature", and "LockStep (x8 SDDC ECC memory) feature. SDDC (Single Device Correction) allows automatic correction of memory error (multi-bit error).

IMPORTANT:

- The memory mirroring and LockStep features are not available in the normal memory configuration. Contact your service representative for details.
- To use x4 SDDC ECC memory feature, additional 2-GB/4-GB/8-GB memory board is required. The factory-installed two 1-GB DIMMs and additional 1-GB memory board is unavailable for x4 SDDC feature.
- "Memory mirroring feature" and "LockStep (x8 SDDC ECC memory) feature cannot be used in the normal memory configuration.

The memory area on the motherboard of the server is divided into two memory channels as shown in the figure below.

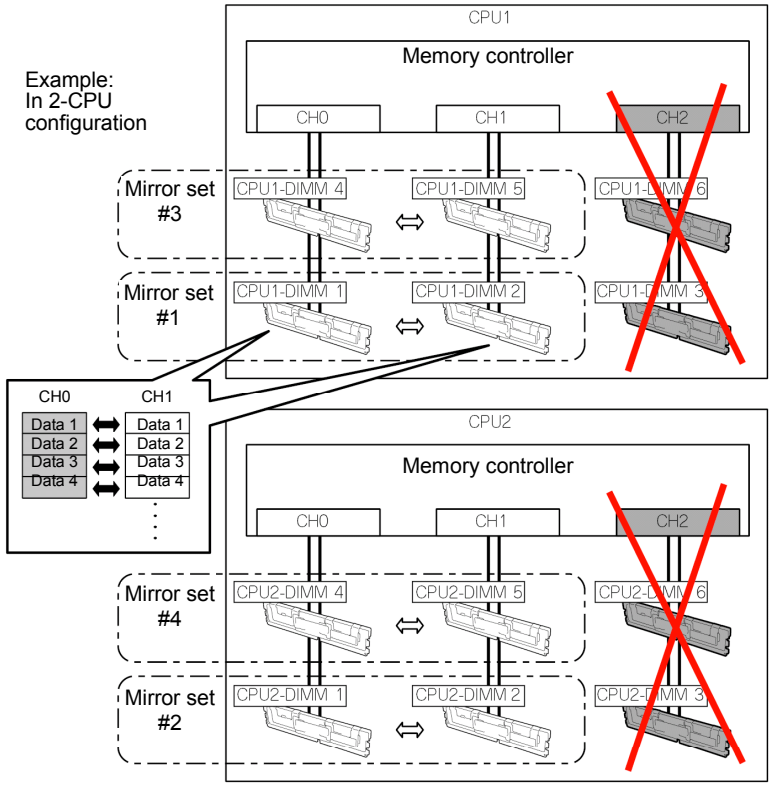


The memory mirroring and LockStep features keep memory redundancy between memory channels by monitoring or altering memory active/inactive status, respectively.

Memory Mirroring

The memory mirroring feature writes the same data into two groups of DIMMs corresponding with each other between memory channels (channels 0 and 1) to provide data redundancy.

IMPORTANT: The memory mirroring feature uses channels 0 and 1. In memory mirroring configuration, the memory channel 2 of each CPU (CPU1-DIMM3/6, CPU2-DIMM3/6) is disabled.



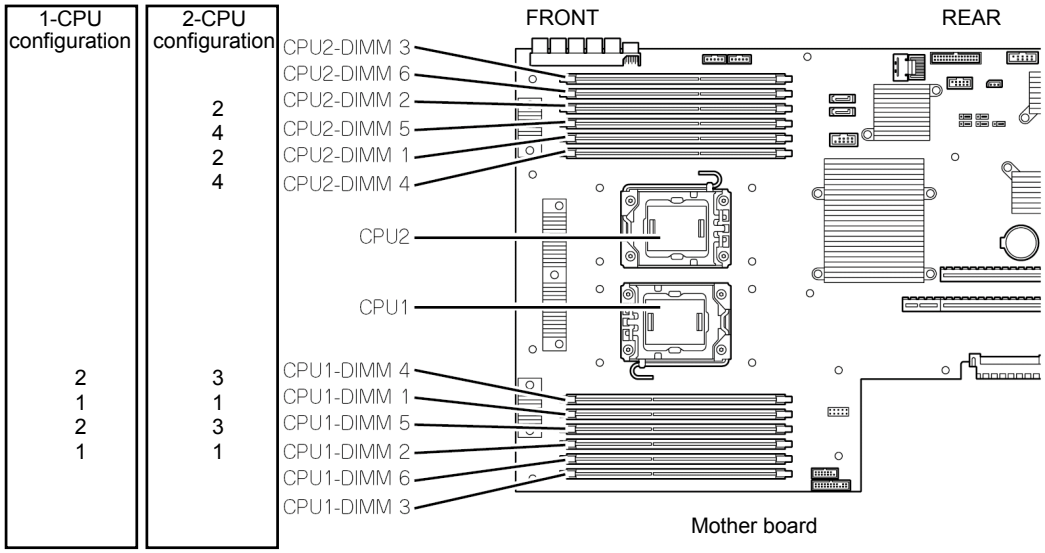
NOTE: The operating system only recognizes a half of the total physical capacity.

The memory mirroring feature can be used under the following conditions:

- Install memory devices on two memory sockets configuring a mirror set.
- All the installed memory devices should have the same capacity.
- Run SETUP (see Chapter 4), change parameters appropriately in the [Mirror] menu selected as shown below, save the settings and exit from SETUP.

  [Advanced] → [Memory Configuration] → [Memory RAS Feature] → [Mirror]

■ Install memory devices in the following order:



The following mirroring cannot be configured:

■ Memory mirroring within a specific memory channel

Notes on Configuring Memory Mirroring

In memory mirroring configuration, the menus related to memory mirroring in BIOS SETUP are grayed out and unselectable in the following cases:

- When you additionally install DIMMs that unable to configure memory mirroring
- When you remove DIMMs that takes down the memory mirroring

In this case, execute [Load Setup Defaults] to cancel the memory mirroring configuration.

<Procedure>

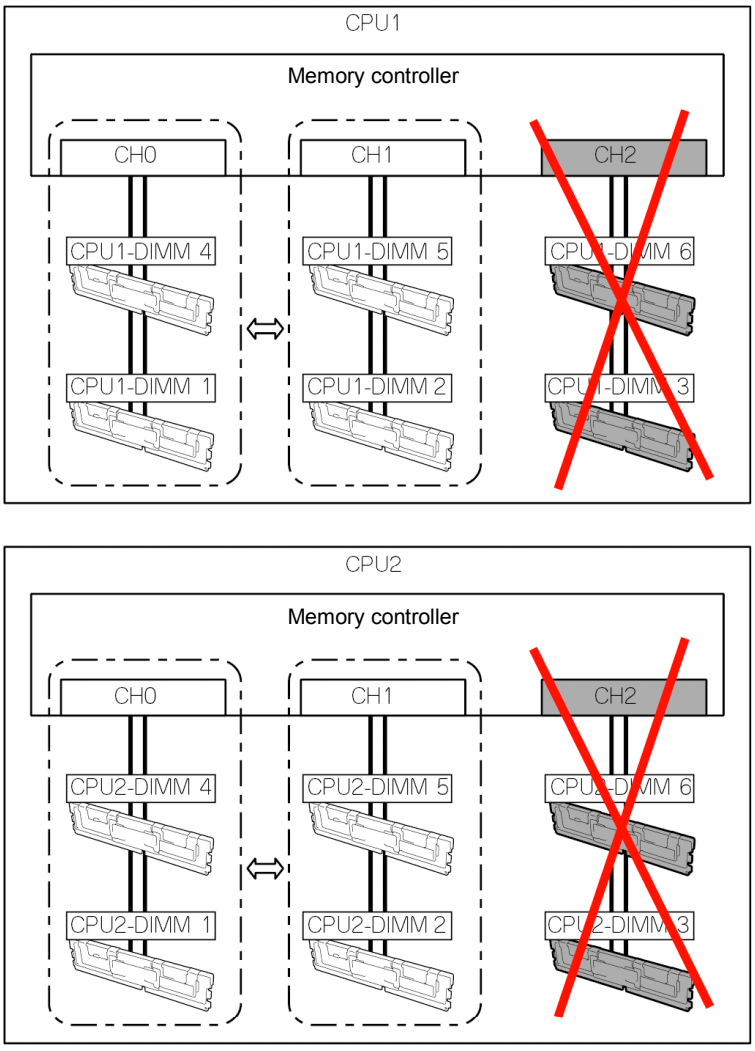
1. Take a note of settings in BIOS SETUP.
2. Press **F2** during POST to run BIOS SETUP utility.
3. Select [Exit] → [Load Setup Defaults].
4. When a message "Load default configuration now?" appears, select [Yes].
5. Enter the parameter values you have saved in step (1).

NOTE: Executing [Load Setup Defaults] restores the default values for all Setup parameters. You need to specify those parameters again.

LockStep Feature (x8 SDDC)

In LockStep feature, the DIMMs in two groups corresponding to two memory channels (channels 0 and 1) is multiplexed and operated in parallel to enable x8 SDDC (x8 Single Device Data Correction). With this feature, a single device can detect and correct one to eight-bit error.

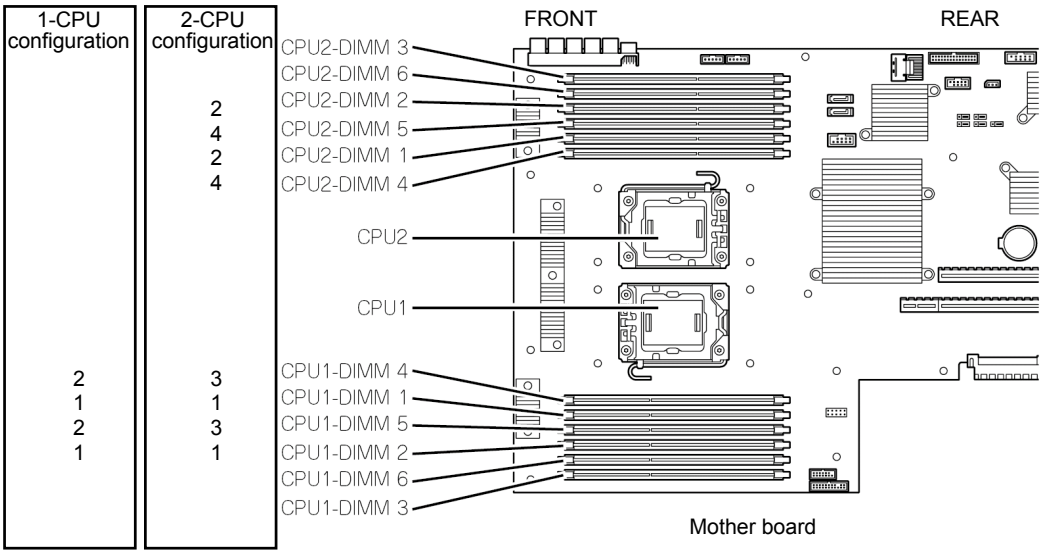
IMPORTANT: The LockStep feature uses channels 0 and 1. In LockStep configuration, the memory channel 2 of each CPU (CPU1-DIMM3/6, CPU2-DIMM3/6) is disabled.



The LockStep feature can be used under the following conditions:

- Install two DIMMs that operate in parallel in memory socket.
- All the installed DIMMs should have the same capacity.
- Run SETUP (see Chapter 4), change parameters appropriately in the menu selected as shown below, save the settings and exit from SETUP.

  Select [Advanced] → [Memory Configuration submenu] → [Memory RAS Feature] → [Lock Step].
- Install memory devices in the following order:



The following LockStep cannot be configured:

- LockStep between memory channels of different memory controllers (CPU).
- LockStep within the same memory channel.

Notes on Configuring LockStep

In LockStep configuration, the menus related to LockStep in BIOS SETUP are grayed out and unselectable in the following cases:

- When you additionally install DIMMs that unable to configure LockStep
- When you remove DIMMs that takes down the LockStep

In this case, execute [Load Setup Defaults] to cancel the LockStep configuration.

1. Take a note of settings in BIOS SETUP.
2. Press **F2** during POST to run BIOS SETUP utility.
3. Select [Exit] → [Load Setup Defaults].
4. When a message "Load default configuration now?" appears, select [Yes].
5. Enter the parameter values you have saved in Step 1.

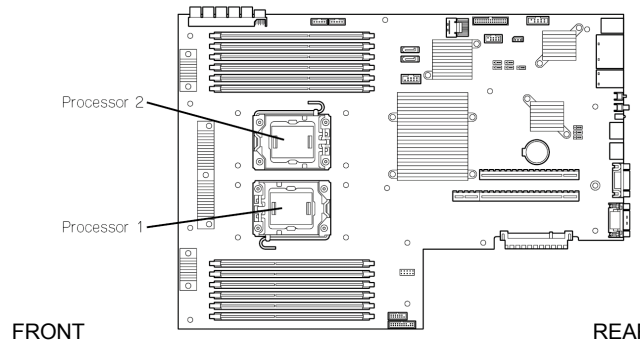
> **NOTE:** Executing [Load Setup Defaults] restores the default values for all Setup parameters. You need to specify those parameters again.

PROCESSOR (CPU)

The server may have another CPU installed in addition to the standard CPU (Intel® Xeon® Processor).

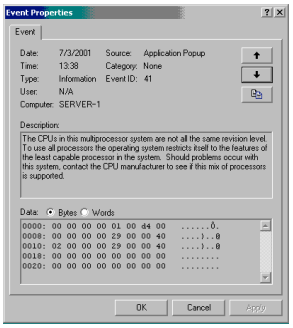
IMPORTANT:

- The CPU is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the CPU. Do not touch the CPU pins by a bare hand or place the CPU directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.
- Do not operate the system until confirming that the additionally installed CPU is in normal state.
- Make sure to use the CPU authorized by NEC. Installing a third-party CPU may cause a failure of the CPU as well as the server. Repair of the server due to failures or damage resulted from installing such a board will be charged.



Mother board

NOTE: If the different revision of the processor is installed in the multiprocessor system, Windows logs the following information every startup. If this message is logged, it is no problem for operation.

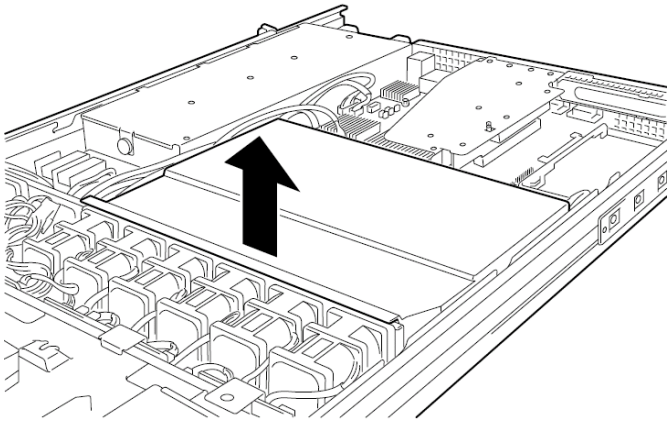

Event Properties
Event
Date: 7/3/2001 Source: Application Popup
Time: 13:38 Category: None
Type: Information Event ID: 41
User: N/A
Computer: SERVER-1
Description:
The CPUs in this multiprocessor system are not all the same revision level. To use all processors the operating system restricts itself to the features of the least capable processor in the system. Should problems occur with this system, contact the CPU manufacturer to see if this mix of processors is supported.
Data: Bytes Words
0000: 00 00 00 00 01 00 04 00 .....Ò.
0008: 00 00 00 00 29 00 00 40 ....)..@
0010: 02 00 00 00 29 00 00 40 ....)..@
0018: 00 00 00 00 00 00 00 00 ....
0020: 00 00 00 00 00 00 00 00 ....
OK
Cancel
Apply

Installation

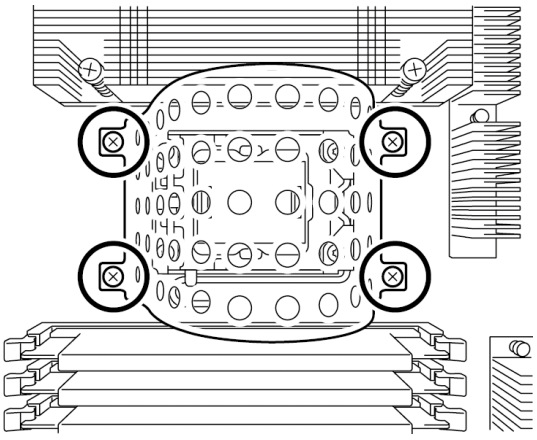
Take the following steps to install the CPU.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Remove the processor duct from the chassis.

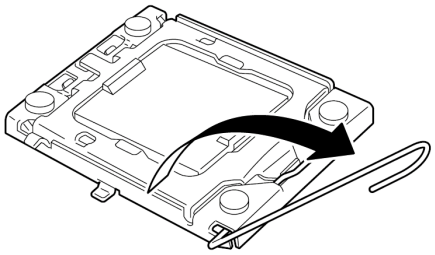
IMPORTANT: Make sure not to damage the internal cables.



5. Locate the CPU socket which you are going to install CPU.
6. Remove the four screws, and remove the CPU dummy cover.

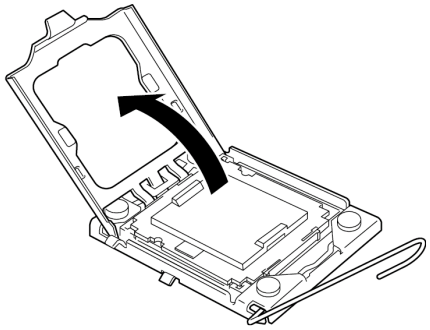


7. Open the socket lever by pushing the lever down and away from the socket.



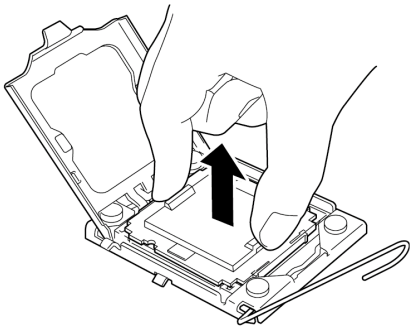
8. Lift the load plate.

IMPORTANT: Do not touch the socket contacts.

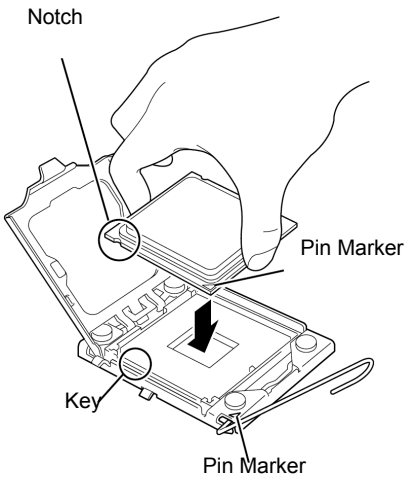


9. Remove the protective socket cover from the load plate.

IMPORTANT: Do not discard the protective socket cover. Always replace the socket cover if the processor is removed from the socket.



10. Take out the new processor, and hold it with your thumb and index fingers oriented as shown in the figure below.

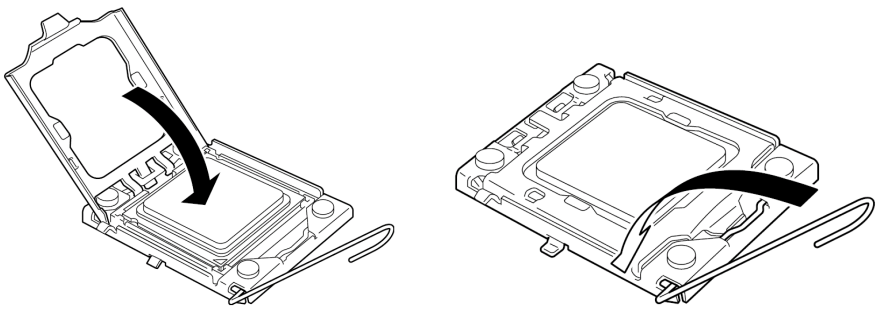


NOTES:

- Align notches with the socket.
- Lower the processor straight down without tilting or sliding it in the socket.

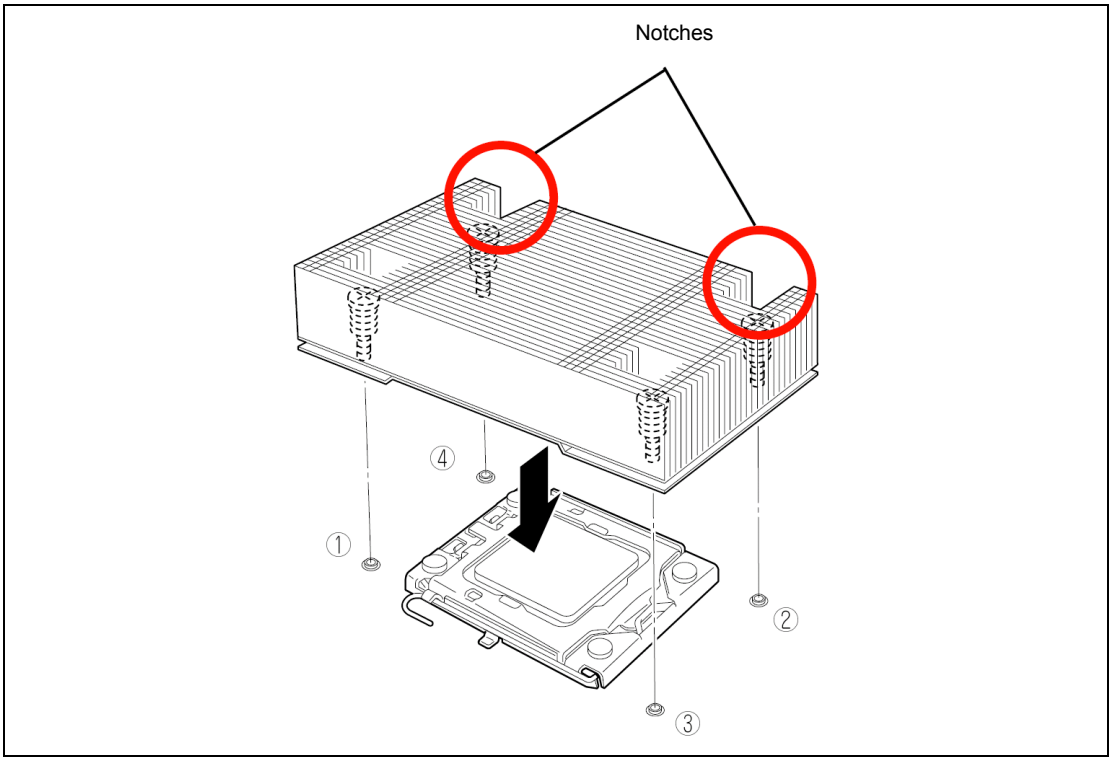
IMPORTANT: Hold the processor only at the edges, being careful not to touch the bottom of the processor.

11. While pressing down on the load plate, close and engage the socket lever.

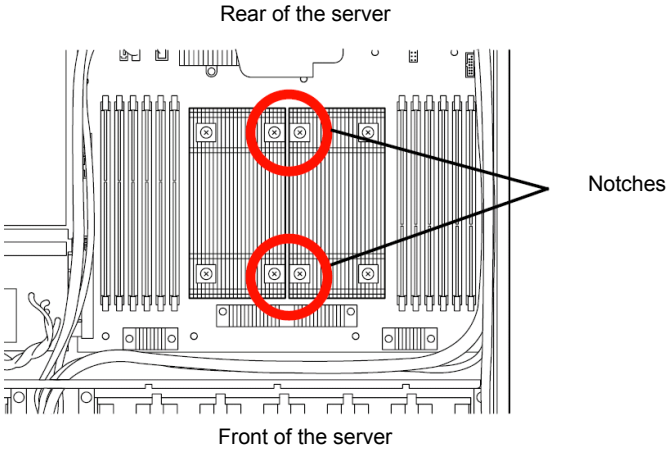


12. Put the heat sink on CPU and fix the heat sink with four screws.

Make sure that the screw aligns with the screw hole. If not, the screw may damage the mother board.



NOTE: Be aware of direction of heat sink (see figure below).

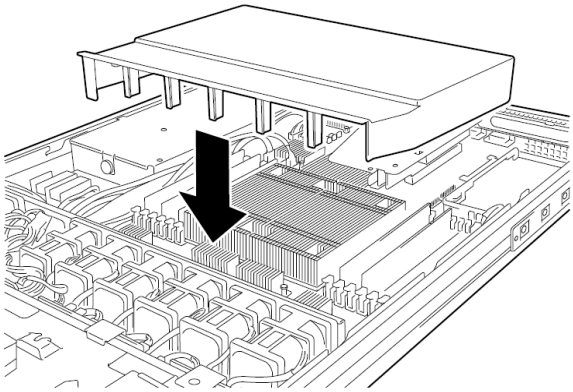


13. Make sure that the heat sink is level.

NOTES:

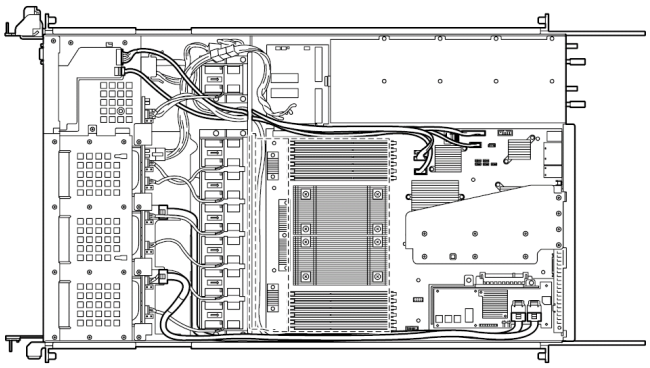
- If the heat sink is not level, remove it, and then install it again. The following probably causes the heat sink not to be level:
  - The CPU is not positioned correctly.
  - All screws are not completely tightened.
- Do not move the secured heat sink.

14. Reinstall the processor duct.



NOTES:

- Check to see that the processor duct is firmly installed with no clearance between the duct and chassis.
- Check to see that no cable is caught between the duct and the mother board.



15. Install the covers you removed previously.

16. Power on the server, start the SETUP utility, and set "Processor Retest" of "Processor Settings" on the Main menu to "Enable".

17. Verify that POST displays no error messages.

    If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.

18. Set "Reset Configuration Data" on the Advanced menu to "Yes".

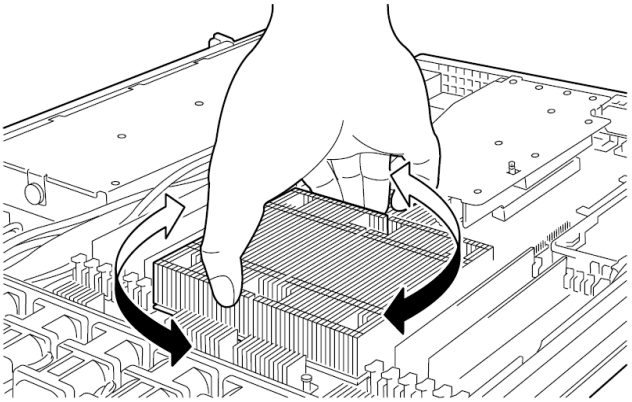
    This setting is required to change the hardware configuration data. See Chapter 4 for details.

Removal

To remove the CPU, prepare the removal referring to steps 1 and 4 in the installation procedure and do the reverse procedure of steps 12 to 7.

IMPORTANT:

- Do not remove any CPU unless it is failed.
- After the operation, heat may make the cool seat at the bottom of the heat sink adhere to the CPU. To remove the heat sink from the CPU, first turn the heat sink to the left and right lightly to make sure that the heat sink can be apart from the CPU. Removing the heat sink with it adhering to the CPU may cause the CPU and/or socket to be defected.



Do the following procedure if a CPU is removed (or replaced).

1. Start SETUP to select menus "Main" – "Processor Settings" – "Processor Retest" in the order to clear the error information on the removed CPU (see Chapter 4).

   When a CPU is replaced, select menus "Main" – "Processor Settings" to confirm that the ID, L2 Cache, and L3 Cache of the additional CPU are defined normally (see Chapter 4).

2. Set "Reset Configuration Data" on the Advanced menu to "Yes."

   This is required to update the hardware configuration information. See Chapter 4 for details.

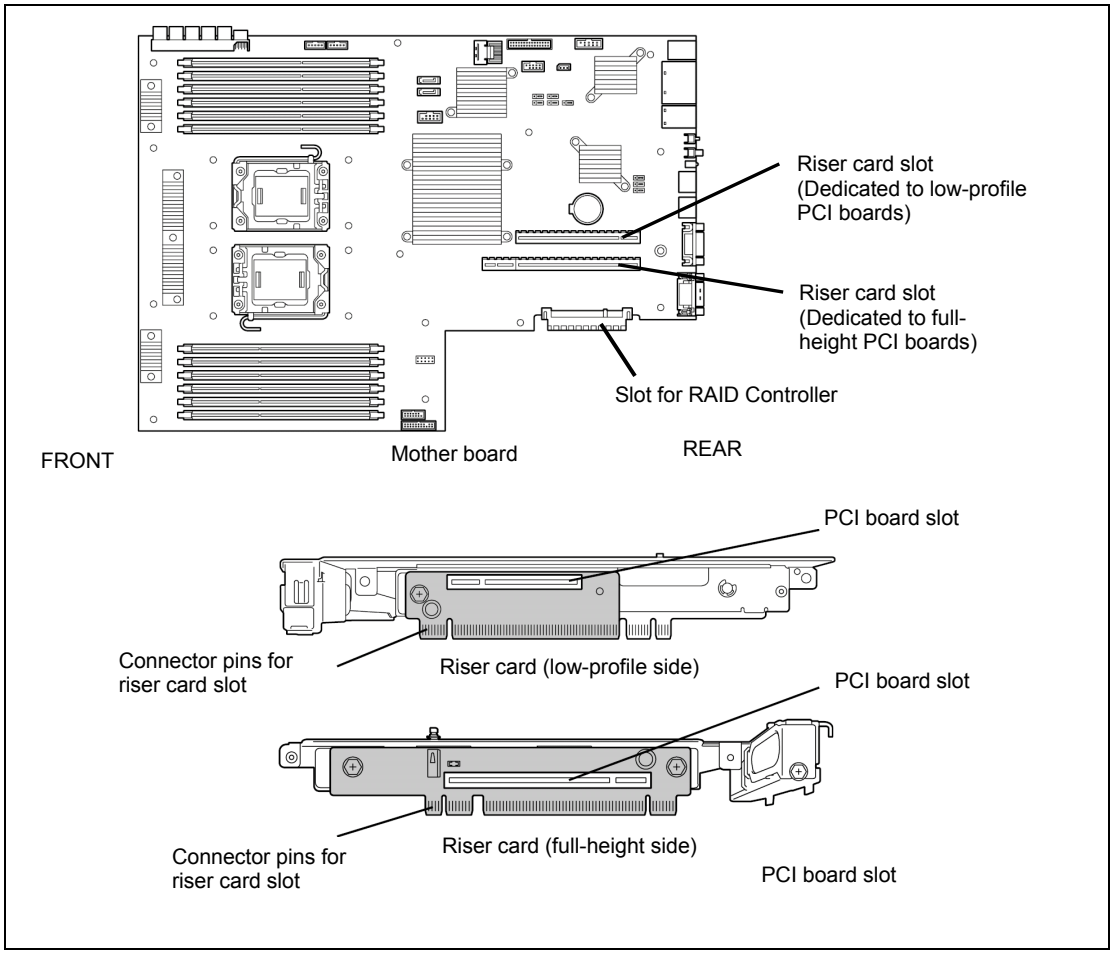
PCI BOARD

The server has a riser card assembly on the mother board that enable installation of PCI boards. The riser card assembly can hole up to two PCI boards.

Insert PCI boards for network extension and file device function extension into PCI board slots in each riser card.

IMPORTANT:

- The PCI board is extremely sensitive to static electricity. Make sure to touch the metal frame of the server to discharge static electricity from your body before handling the PCI board. Do not touch the PCI board terminals or on-board parts by a bare hand or place the PCI board directly on the desk. For static notes, see the section "Anti-static Measures".
- Some restrictions are imposed on the combination of PCI boards which can be installed in the server. Contact your service representative for details.
- A riser card is designed for installing only low-profile PCI boards or full-height PCI boards. Before installing a PCI board, make sure of the card specification.
- If the SCSI controller, RAID controller, LAN board (for network boot), or Fibre Channel controller is not connected with the hard disk drive that contains OS, be sure to disable Option ROM for that board. See Chapter 4 for details.


Riser card slot
(Dedicated to low-profile
PCI boards)
Riser card slot
(Dedicated to full-
height PCI boards)
Slot for RAID Controller
FRONT
Mother board
REAR
PCI board slot
Connector pins for
riser card slot
Riser card (low-profile side)
PCI board slot
Connector pins for
riser card slot
Riser card (full-height side)
PCI board slot

Notes

Observe the following notes on installing/removing a PCI board:

- Do not touch the terminals of the riser cards and the leads of electronic components with your bare hand. Fingerprints and dust left on them cause the server to malfunction due to a connection failure or damage to the leads.
- A riser card is designed for installing only low-profile PCI boards or full-height PCI boards. Before installing a PCI board, make sure of the card specification.
- PCI slot number "1C" is assigned to the riser card for low-profile PCI boards, and "1B" is assigned to the riser card for full-height PCI boards.
- The system detects the boot devices in order of the PCI bus slots 1B (full-height PCI board) and then 1C (low-profile PCI board).
- The PCI devices of the same type (including onboard PCI device) may be recognized in different order from that described above, depending on OS or RAID System BIOS Utility. Check the slot location of PCI device by PCI bus number, device number and function number shown in the table below.

	Bus number	Device number	Function number
Onboard NIC1	1	0	0
Onboard NIC2	1	0	1
Slot 1C	40	0	X
Slot 1B*	10	0	X
Slot 1B (N8116-23)	11	0	X

* On certain PCI devices, other bus number may be assigned..

- Set "Disabled" for the optional ROM of a LAN device not to be booted by using the BIOS SETUP utility.
- If an additional LAN device is installed, it is hard to push the catch of the connector with your finger that is connected to the LAN port. Disconnect the connector pushing the catch with a standard screwdriver. At this time, be very careful for the screwdriver not to damage the LAN port or other ports.
- If a bootable PCI board (e.g., a RAID Controller, SCSI controller, or LAN card) is additionally installed, the boot priority is changed. After the additional installation, start the BIOS SETUP utility, select [Boot] and set the new boot priority.
- Contact your service representative for the acceptable optional PCI board.

Installation

Take the following steps to install a PCI board on the riser card:

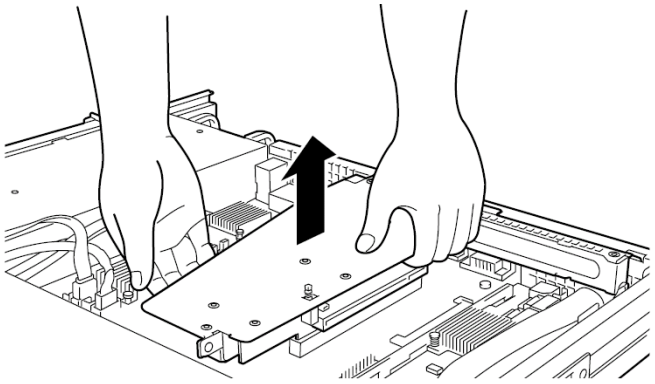
IMPORTANT: The full-height riser card is equipped with an "insulator (black)" to protect PCI boards. Do not remove the insulator, and handle it carefully. The insulator is not shown in the figures in this manual for simplifying the illustrations.

NOTES:

- Each riser card supports low-profile or full-height PCI boards. Before installing a PCI board, confirm that the type of the PCI board.
- When installing a PCI board, confirm that the card connector matches the connector of the riser card.

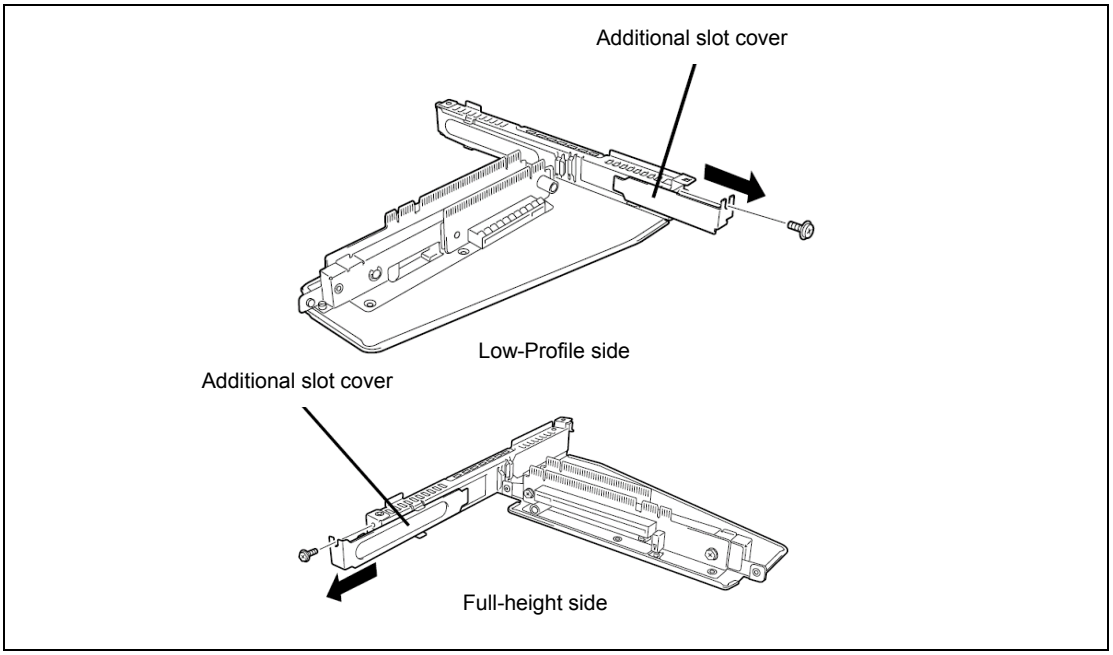
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Grasp a handle on the riser module assembly and lift straight up and remove the riser module assembly from the server.

NOTE: Be very careful not to contact with the other component.



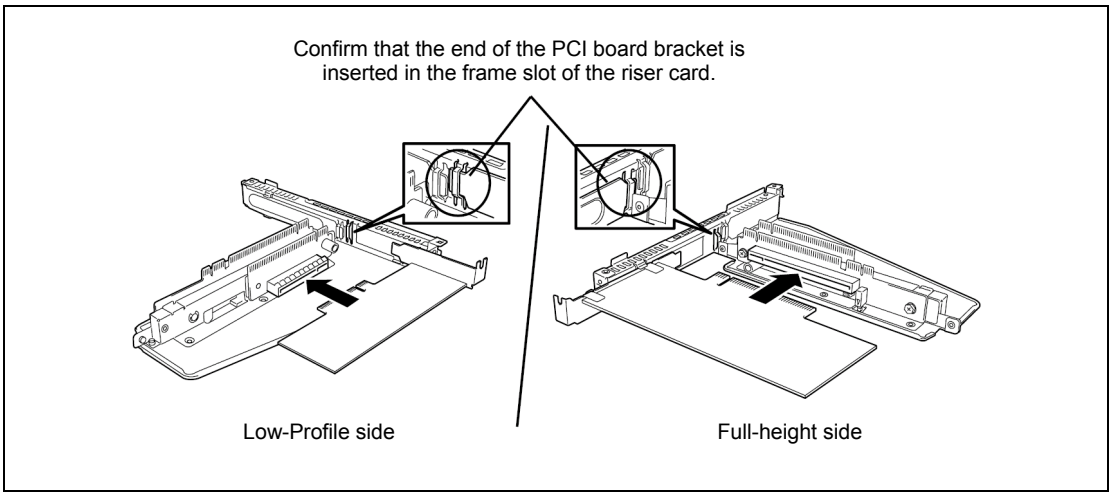
5. Remove the screw from the riser card, and remove the additional slot cover.

NOTE: Keep the removed additional slot cover for future use.



6. Install the PCI board on the riser card.

Align the PCI board terminal section with the riser card slot, and firmly push the PCI board until it is fully seated.


Confirm that the end of the PCI board bracket is inserted in the frame slot of the riser card.
Low-Profile side
Full-height side

IMPORTANT:

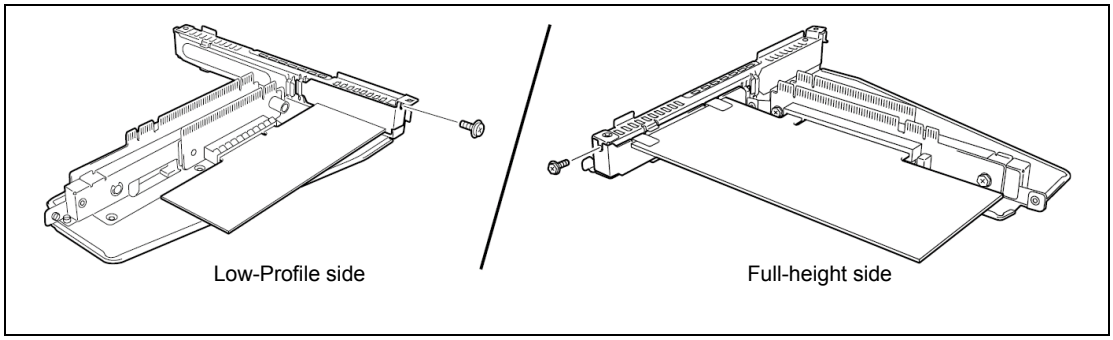
- Do not touch the terminals of the riser cards and PCI boards with your bare hand. Fingerprints and dust left on them cause the server to malfunction.
- If you are unable to install a PCI board correctly, remove it, and then install it again. Be careful not to apply excess force to a PCI board or riser card. Doing so may damage the card.

NOTES:

- Confirm that the end of the PCI board bracket is inserted in the frame slot of the riser card.
- Some PCI boards have terminal section that extends over the mating connector.

7. Secure the PCI board with the screw you removed in step 5.

IMPORTANT: This step is to protect the terminals of the riser card from dust or fingerprints. Dust and fingerprints left on them cause the server to malfunction.

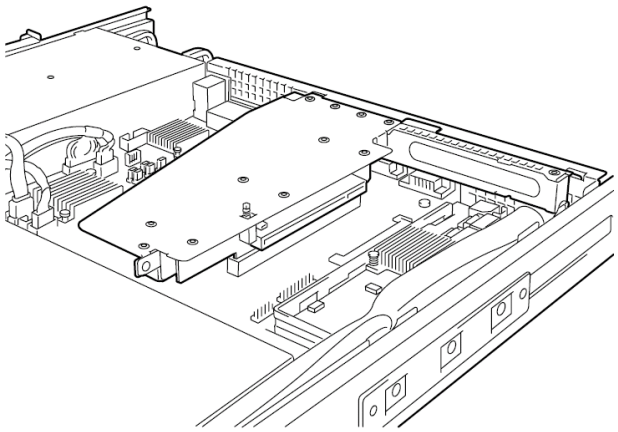


8. Insert the riser module assembly into the slot on the mother board.

Align the riser card terminal section with the slot on the mother board, and firmly push the riser module until it is fully seated.

NOTES:

- There are catches on the riser card frame that are used to secure the riser card to the cabinet. When inserting the riser card, confirm that the catches are correctly fit into the holes on the rear of the cabinet. After the insertion, push the riser card with your fingers until you cannot see any part of the riser card terminal section. The riser card is now fully seated in the slot.
- Pay attention not to damage the components on mother board with the riser card when inserting it into the slot.



9. Install the components you removed previously.

10. Verify that POST displays no error messages.

If POST displays an error message, take a note on the message and see the POST error messages listed in Chapter 8.

11. Run the BIOS SETUP utility and select "Yes" for [Advanced] → [Reset Configuration Data].

This setting is required to change the hardware configuration data. See Chapter 4 for details.

Removal

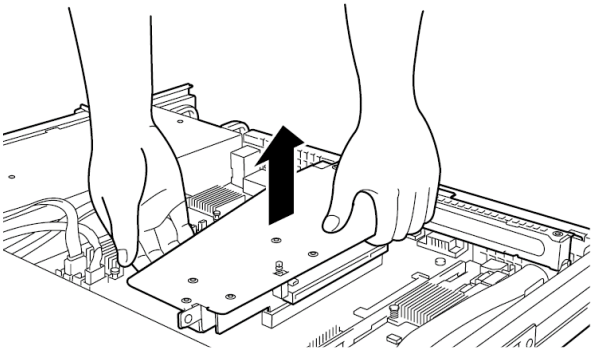
Remove a PCI board in reverse order of the installation steps.

Installing RAID Controller

Take the following steps to install the optional RAID Controller in the RAID Controlelr slot.

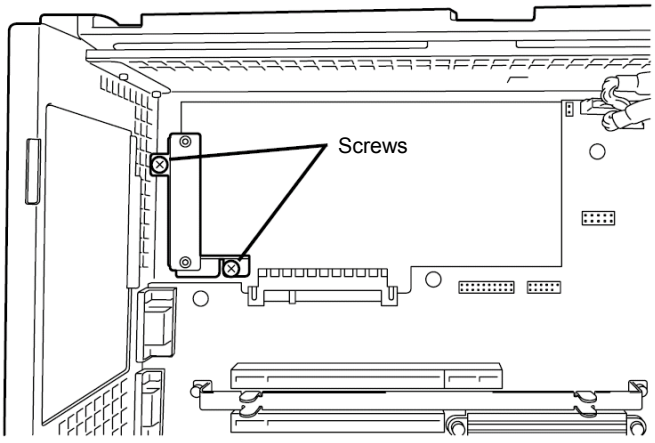
> **IMPORTANT:** With 2.5-inch disk model server, first remove the Internal RAID Controller (equivalent to N8103-116A), then install the optional RAID Controller.

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Remove the riser card.

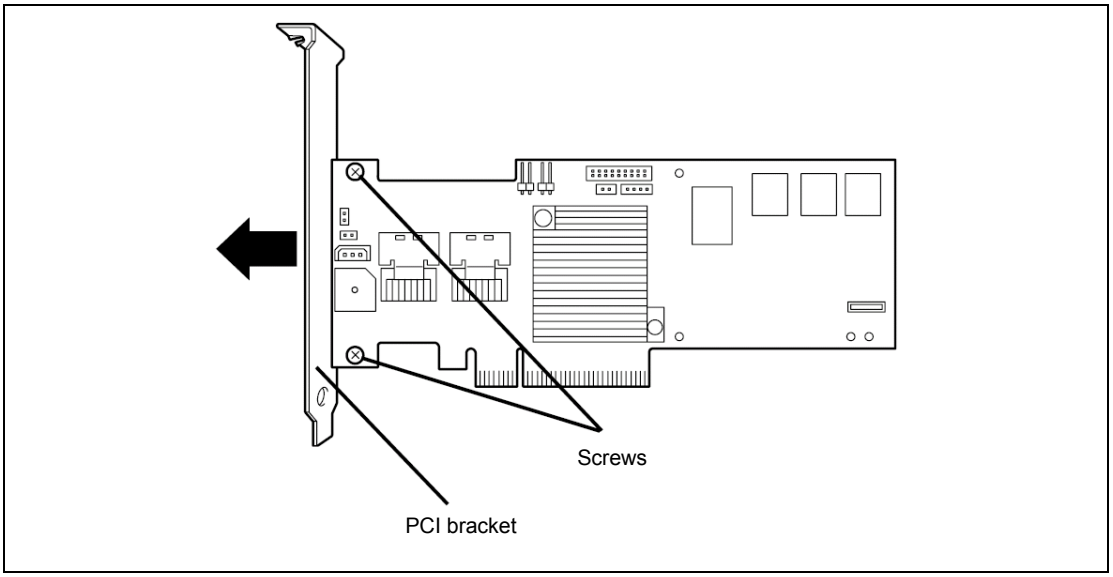


> **IMPORTANT:** Carefully remove the riser card so as not to contact with any other components.

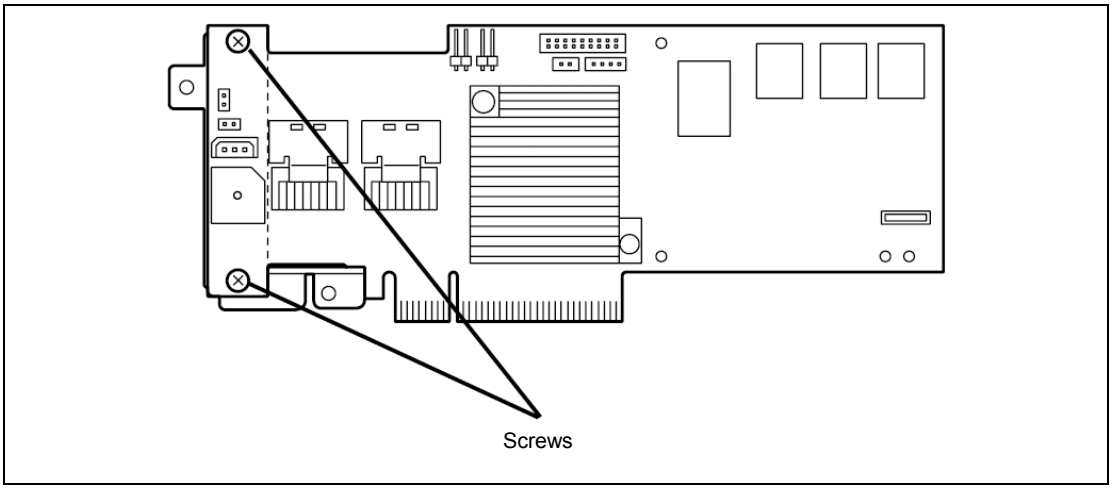
5. Remove the two screws from the bracket, then remove the bracket.



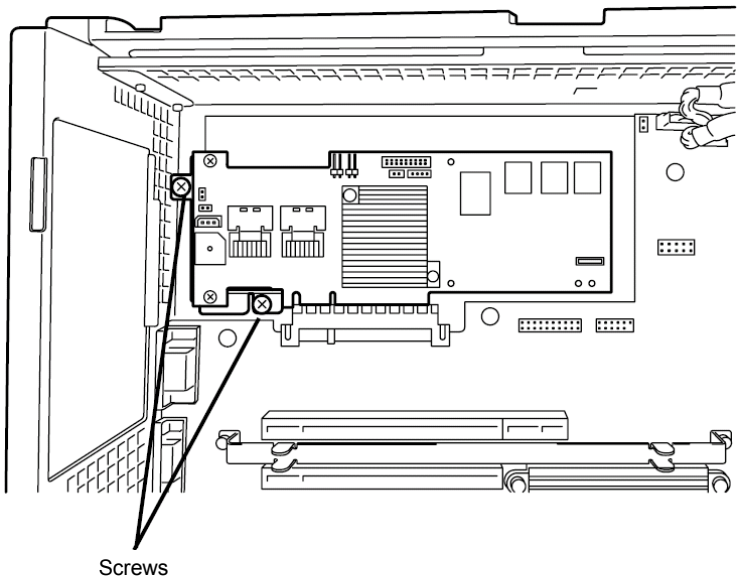
6. Remove the PCI bracket from the RAID Controller.



7. Install the RAID Controller to the bracket that has been removed from the server chassis. Use the screws that were used for securing the PCI bracket.



8. Install the RAID Controller in the server chassis, and secure it with the screws used for securing the bracket.



9. Install the components you have removed.

Removing RAID Controller

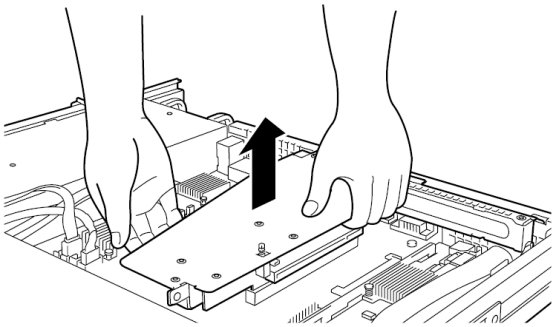
Remove the RAID Controller in reverse order of the installation steps.

Installing Additional Battery for RAID Controller

Take the following steps to install an additional battery for RAID Controller.

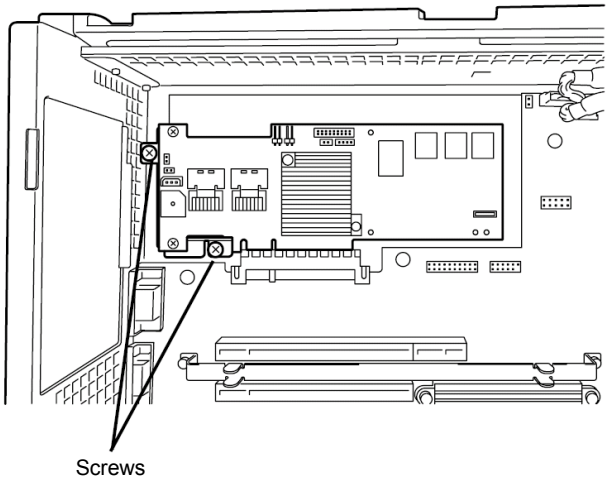
2.5-inch Disk Model

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Remove the riser card.

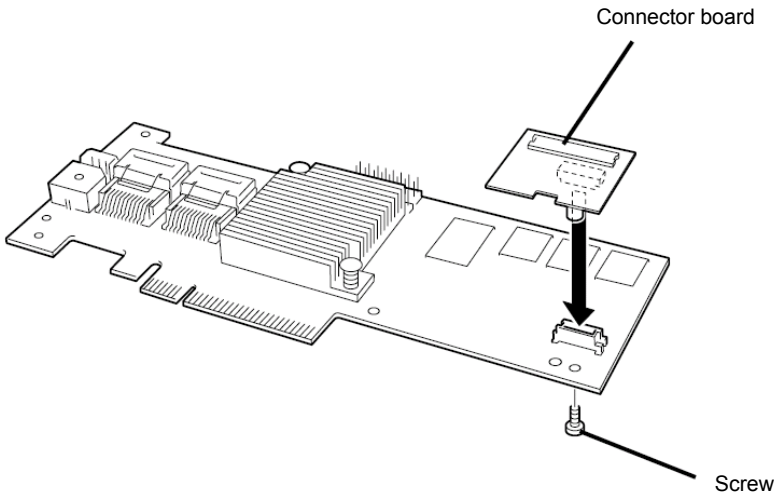


IMPORTANT: Carefully remove the riser card so as not to contact with any other components.

5. Disconnect cables from the RAID Controller.
6. Remove screws from the RAID Controller, then remove the RAID Controller.

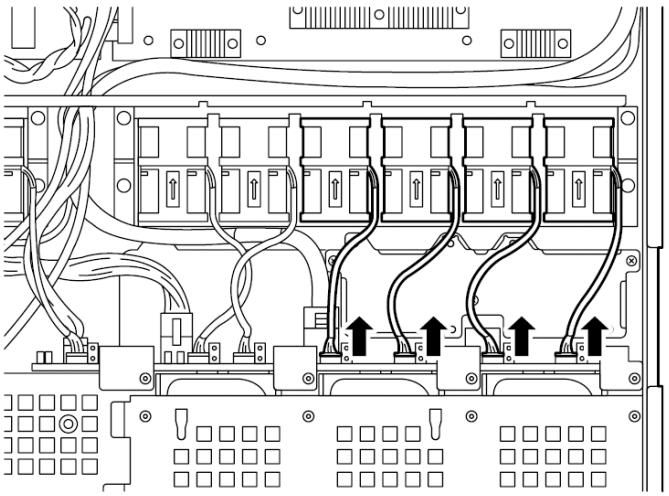


7. Install the connector board provided with the additional battery to the RAID Controller. Use screws that come with the additional battery.

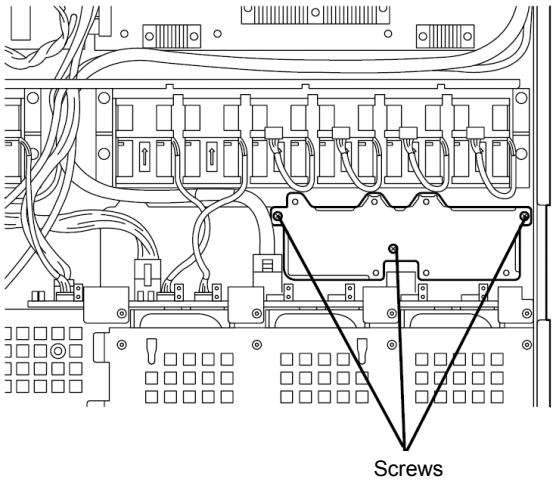


8. Secure the RAID Controller to the server chassis.

9. Disconnect fan cables (four cables at right side viewed from the front).

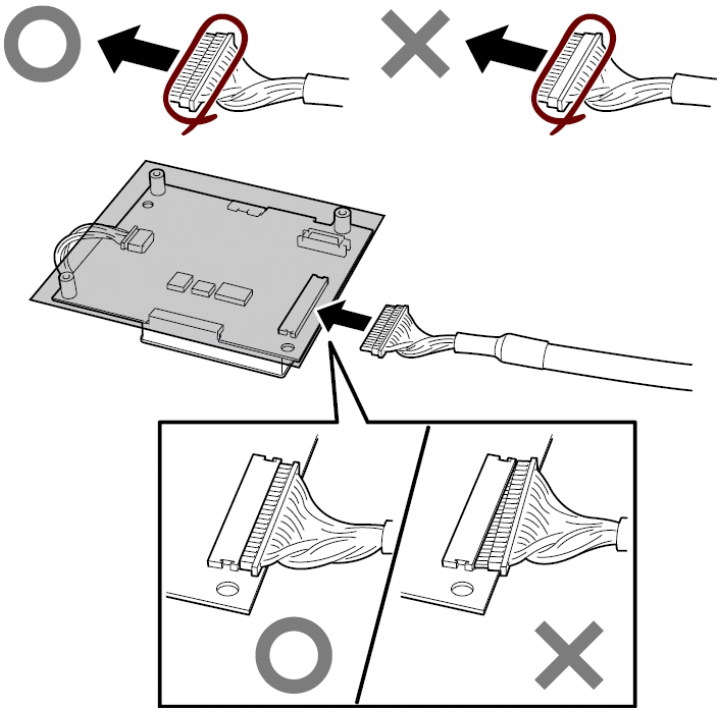


10. Remove the three screws from the battery bracket, then remove the battery bracket.



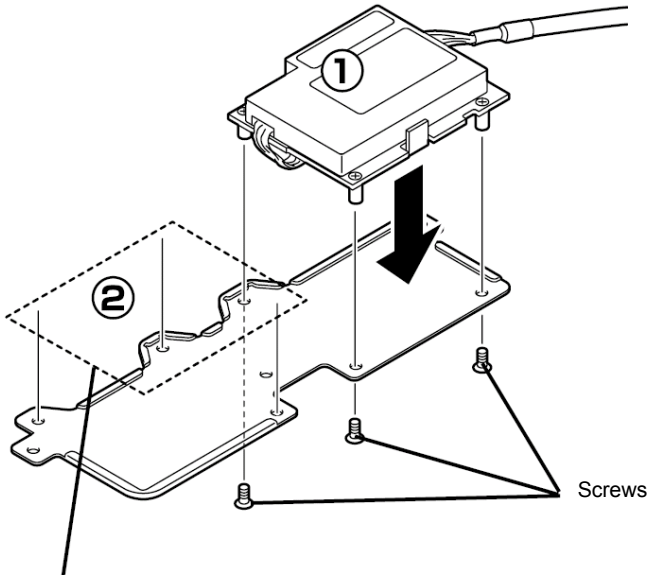
11. Connect the cable to the additional battery.

Be aware of the face of the connector according to the figure below.



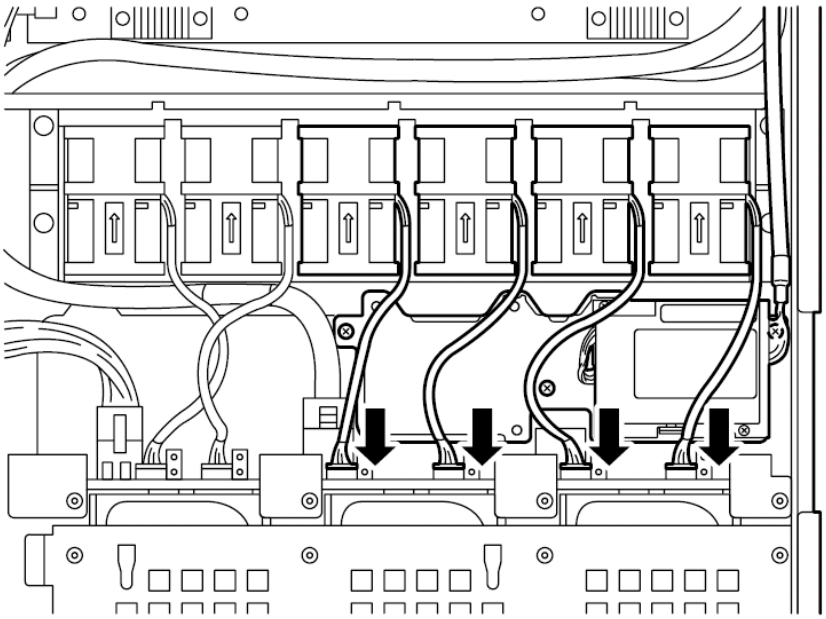
12. Secure the additional battery to the battery bracket with three screws.

Use screws that come with the additional battery.



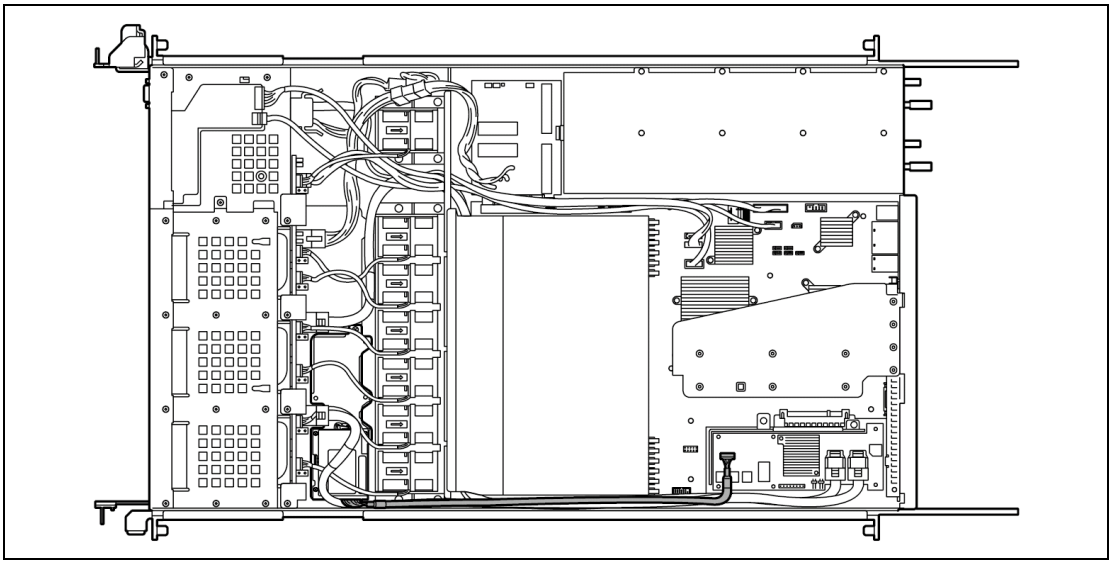
Install the secondary additional battery in the portion enclosed with dashed line.

13. Secure the battery bracket to the server chassis with three screws, and connect the fan cable.

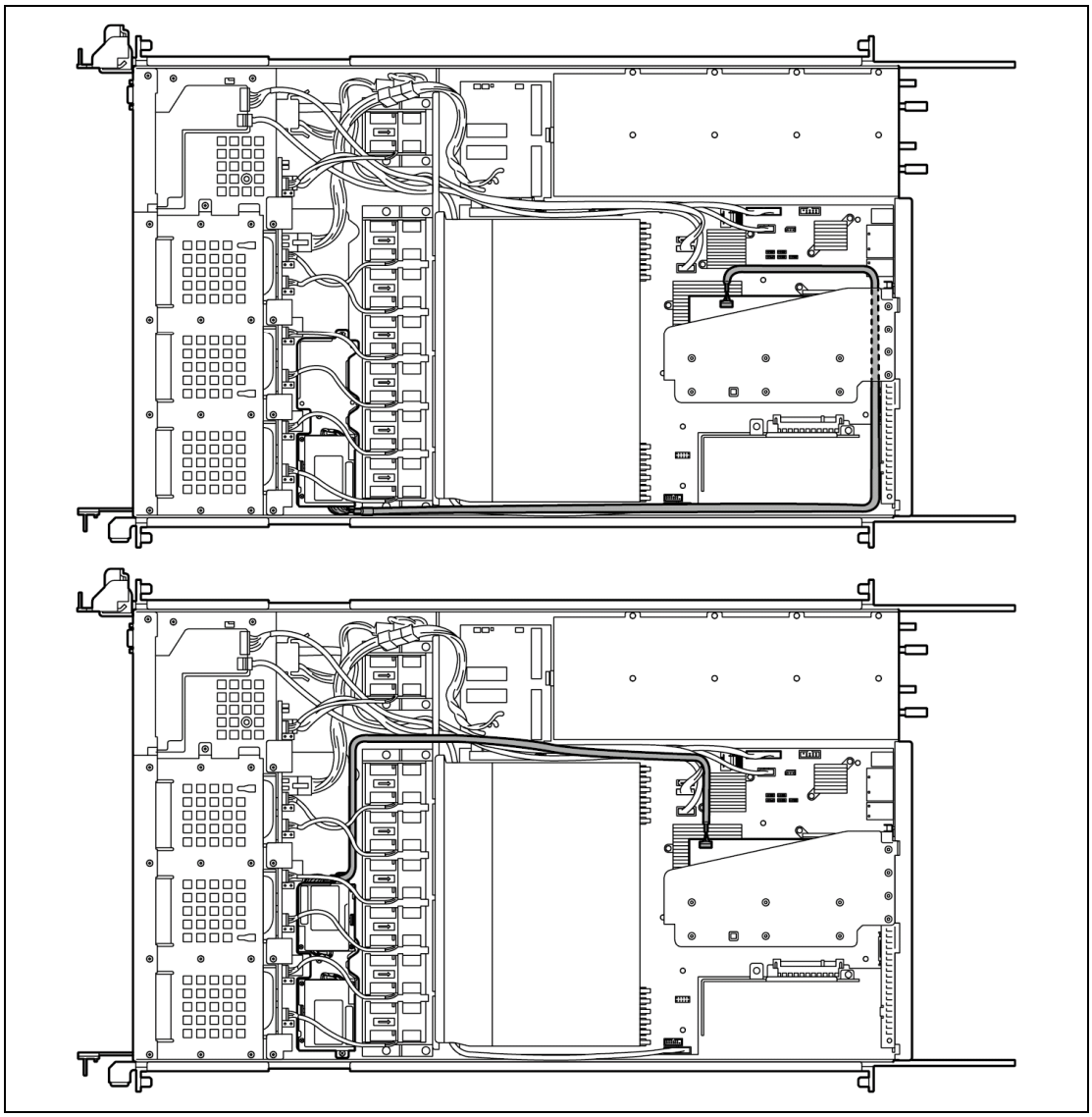


14. Route the cable as shown in the figure below.

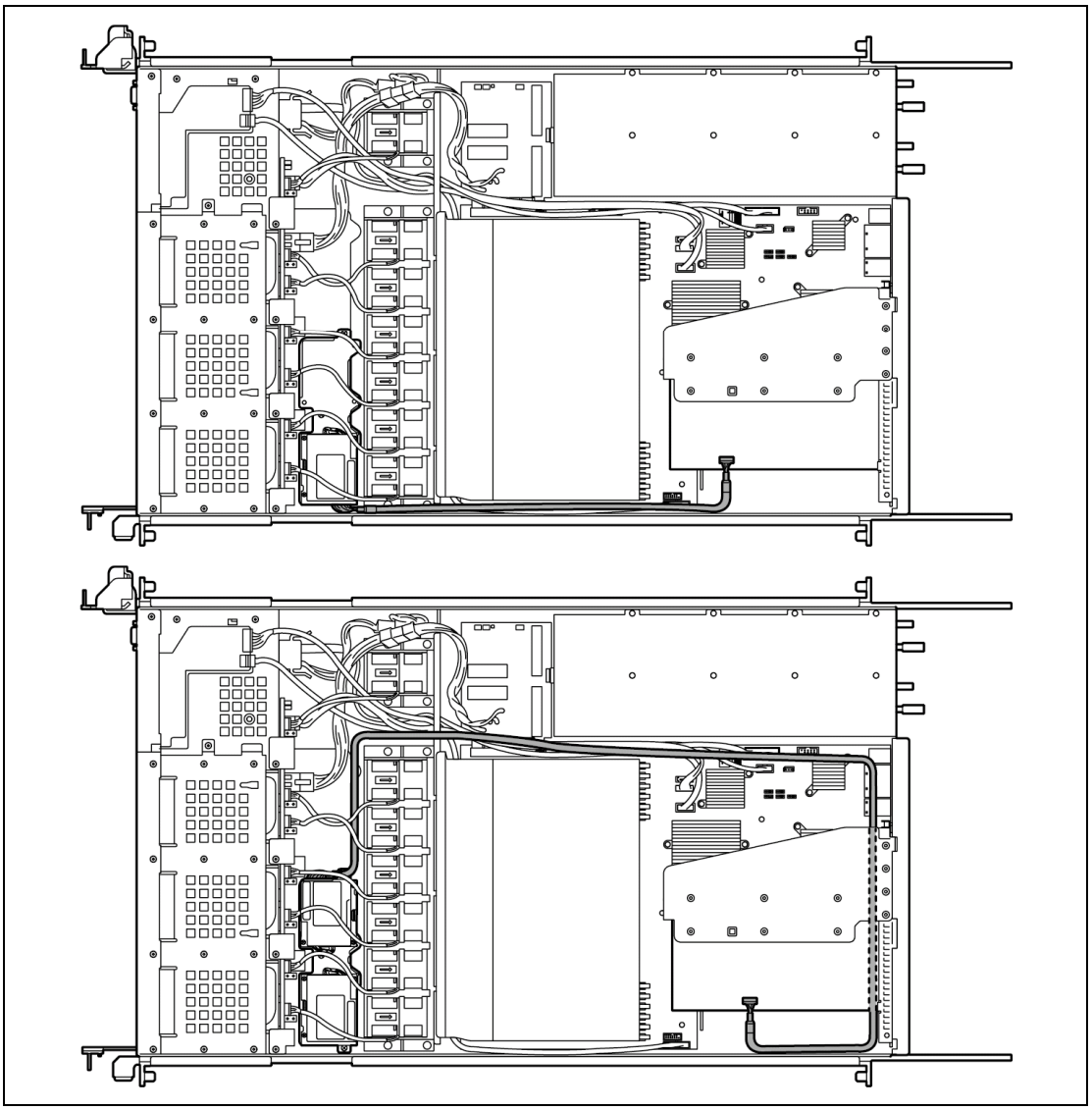
– When connecting with Onboard RAID Controller



– When connecting with optional RAID controller in low-profile slot

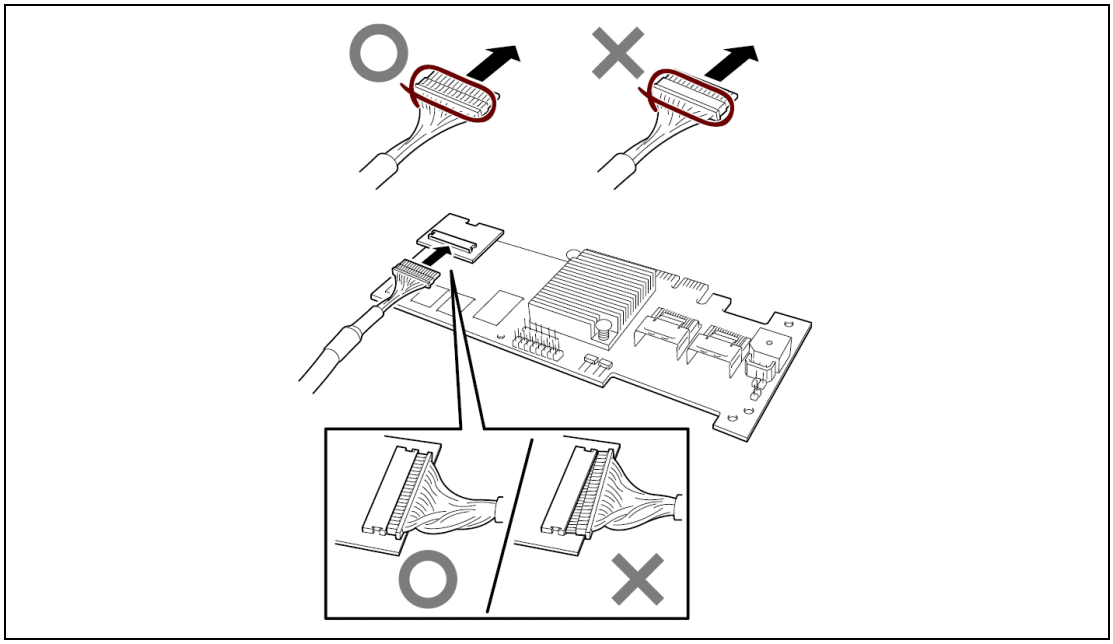


– When connecting with optional RAID controller in full-height slot



15. Connect the cable to the connector board installed on the RAID Controller.

Be aware of the face of the connector according to the figure below.

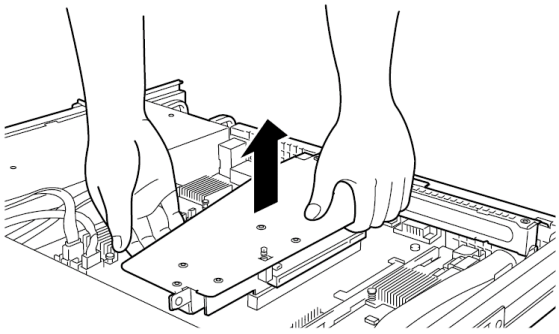


16. Install the components you removed previously.

3.5-inch Disk Model

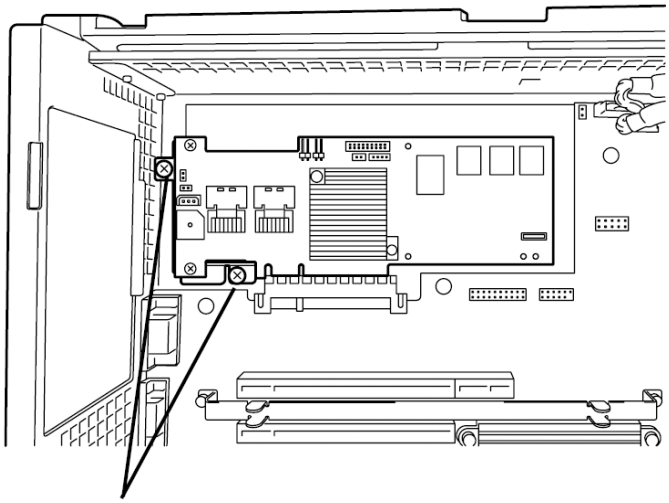
N8103-116A/117A/118A:

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Remove the riser card.



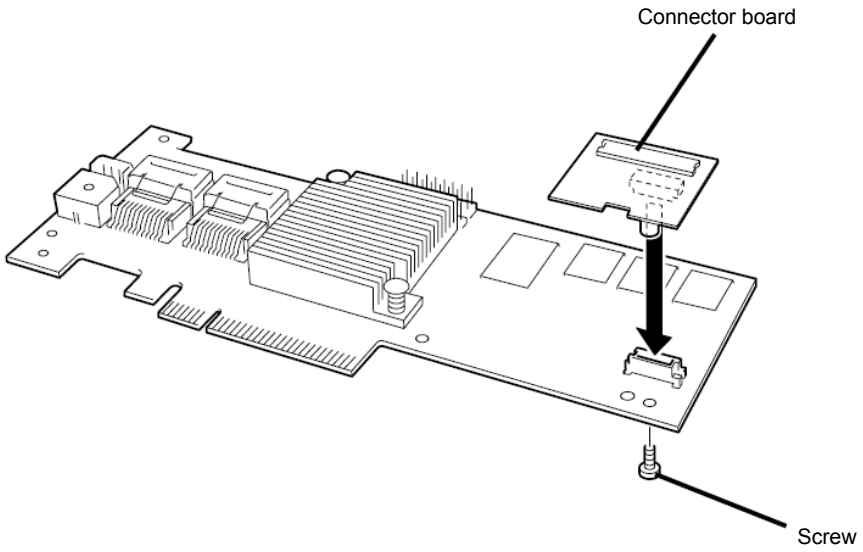
IMPORTANT: Carefully remove the riser card so as not to contact with any other components.

5. Disconnect cables from the RAID Controller.
6. Remove screws from the RAID Controller, then remove the RAID Controller.



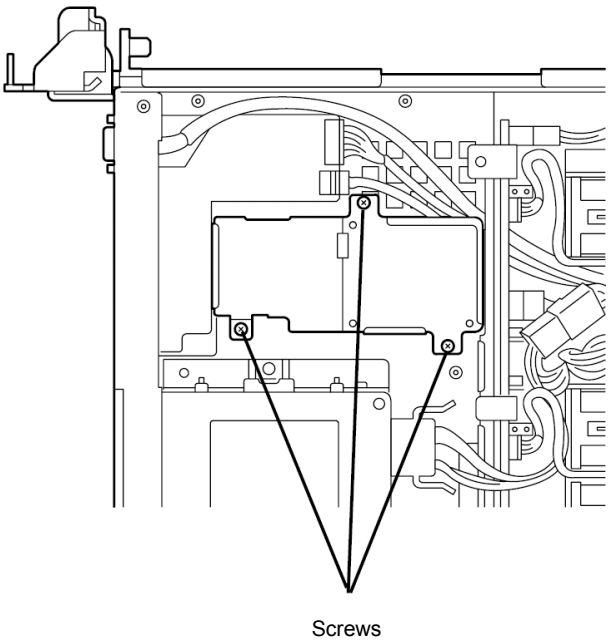
Screws

7. Install the connector board provided with the additional battery to the RAID Controller.

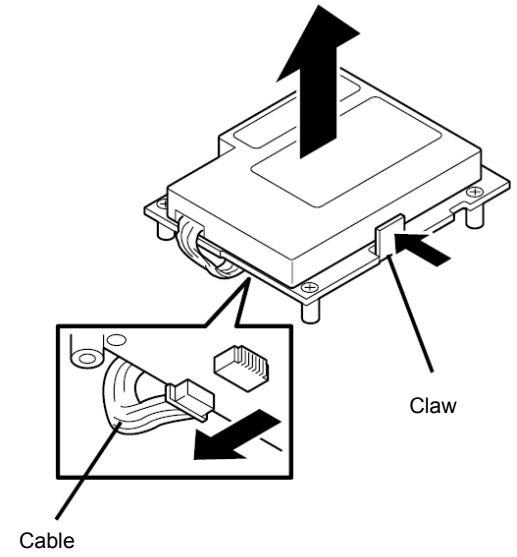


8. Secure the RAID Controller to the server chassis.

9. Remove the three screws from the battery bracket, then remove the battery bracket.

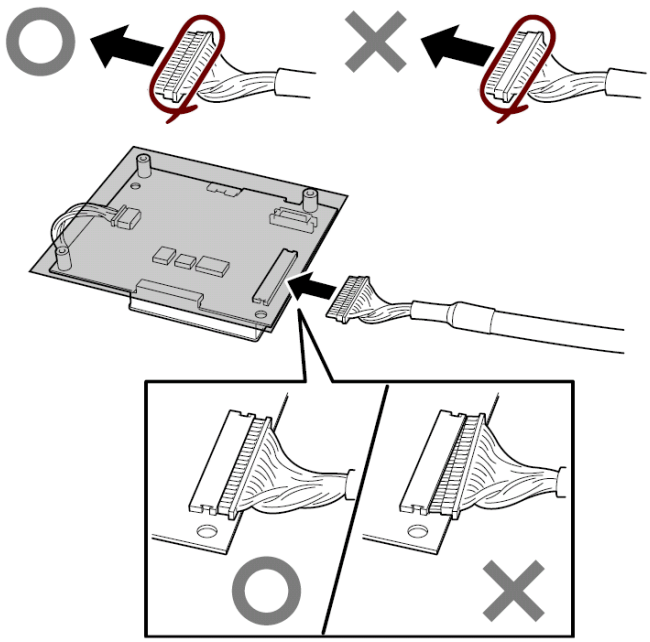


10. Split the additional battery so that the battery is apart from the base board by pushing the claw in the direction of arrow mark, then disconnect the cable.

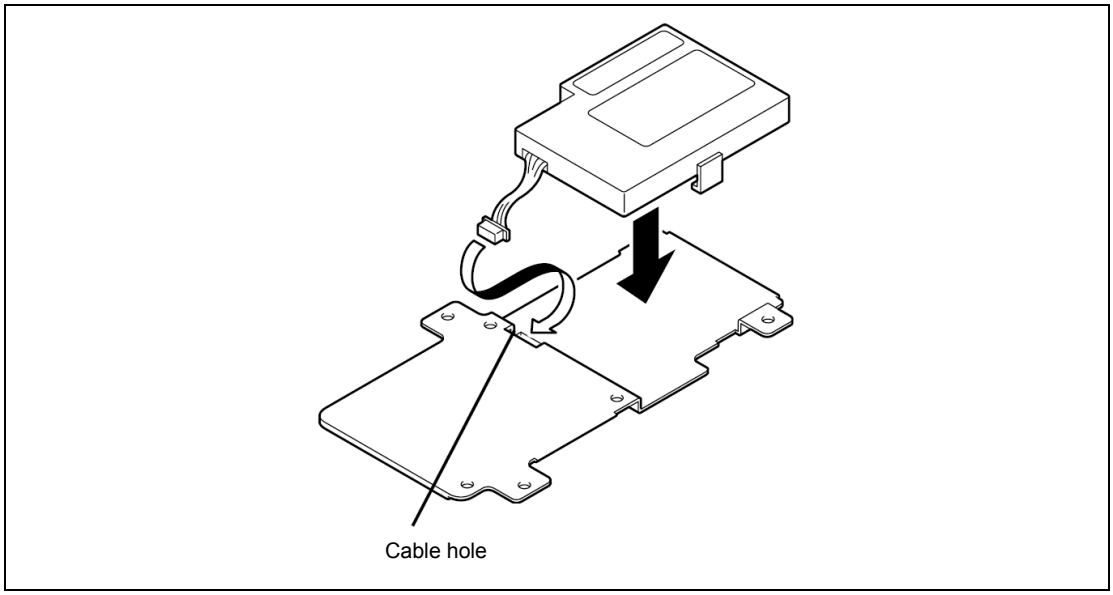


11. Connect the cable to the additional battery.

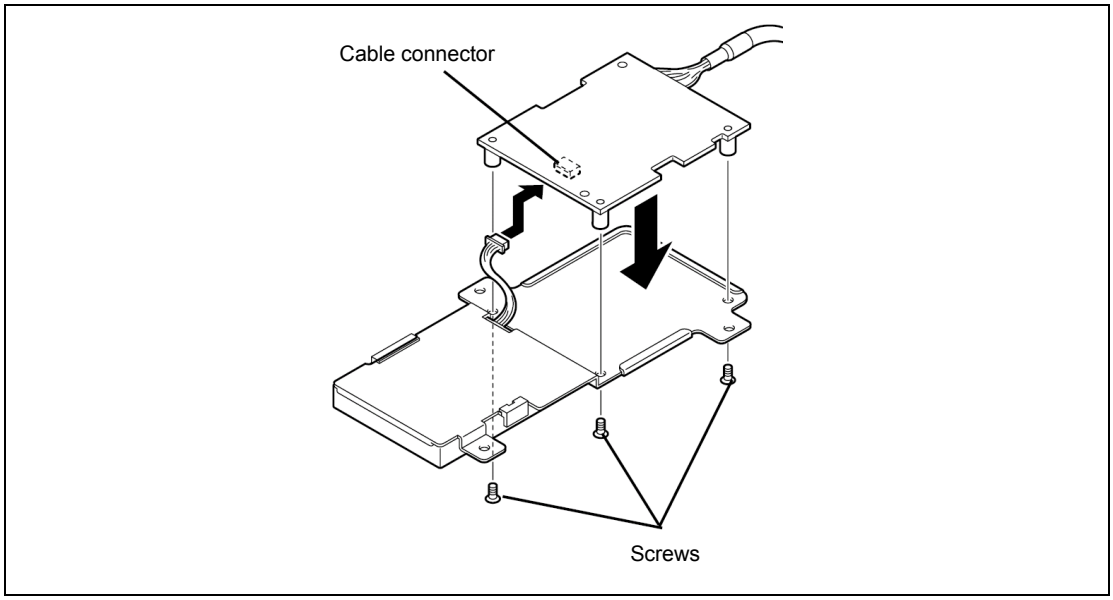
Be aware of the face of the connector according to the figure below.



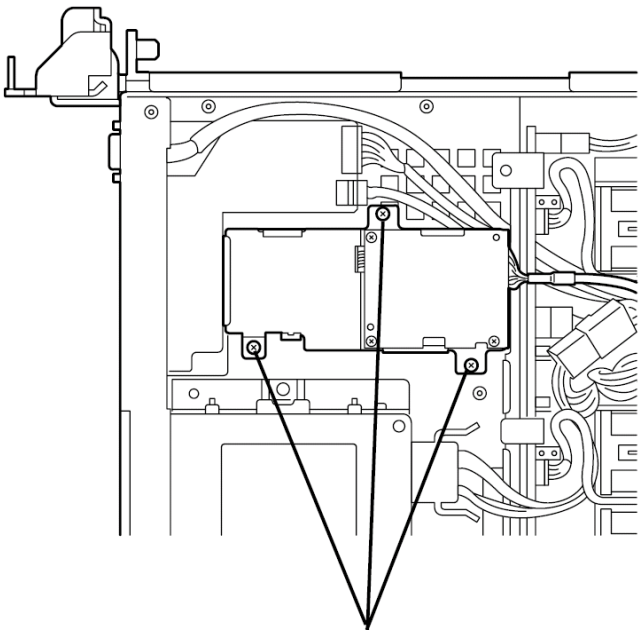
12. Pass the battery cable through the hole on the battery bracket, then install the battery on the battery bracket.



13. Connect the cable to the base board, then secure the base board to the additional battery with the provided screw.

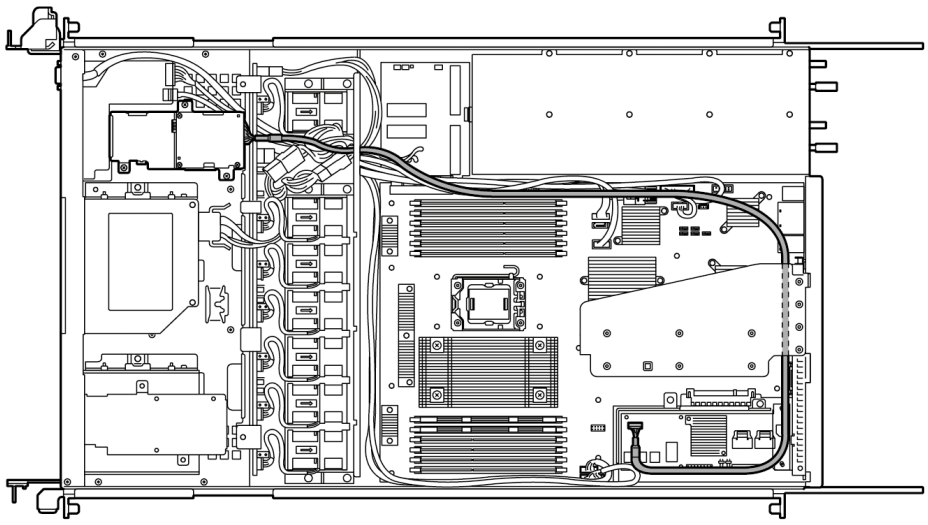


14. Secure the battery bracket on which the additional battery is installed to the server chassis with screws.



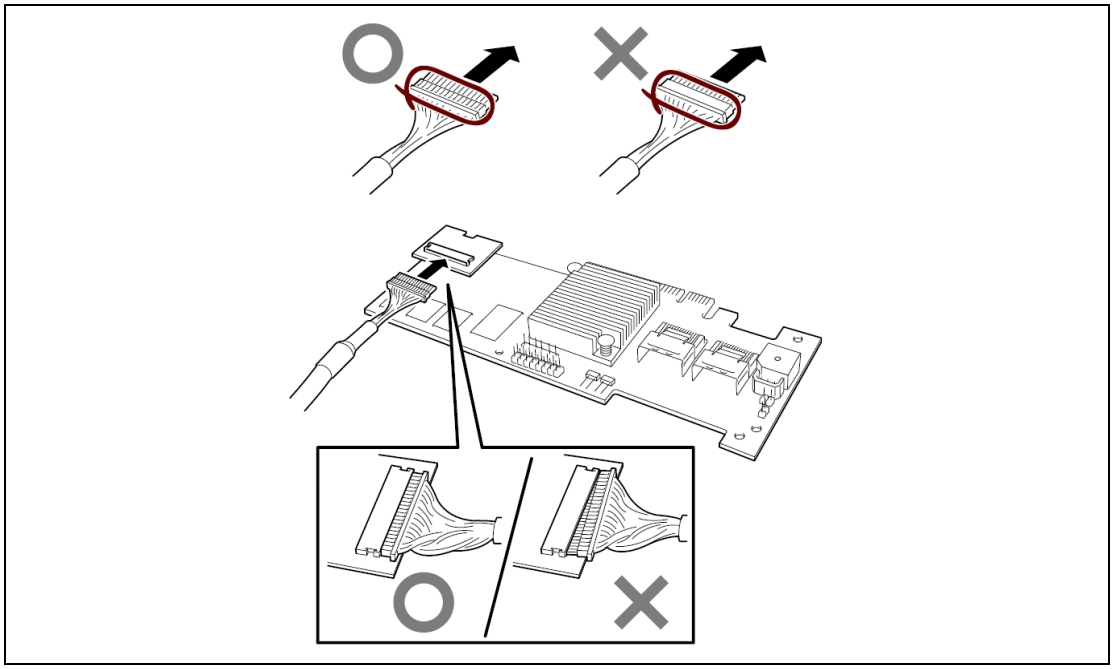
Screws

15. Route the cable as shown in the figure below.



16. Connect the cable to the connector board installed on the RAID Controller.

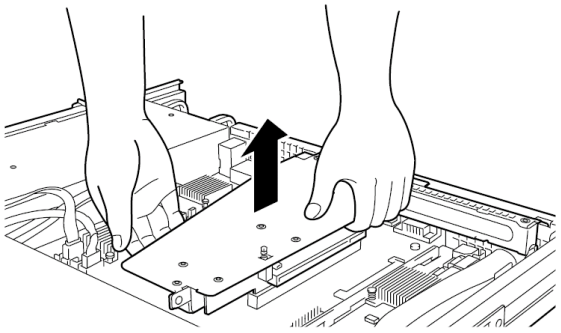
Be aware of the face of the connector according to the figure below.



17. Install the components you removed previously.

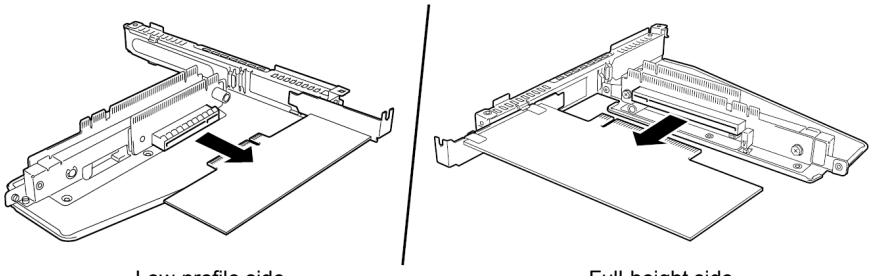
N8103-115A:

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Remove the riser card.

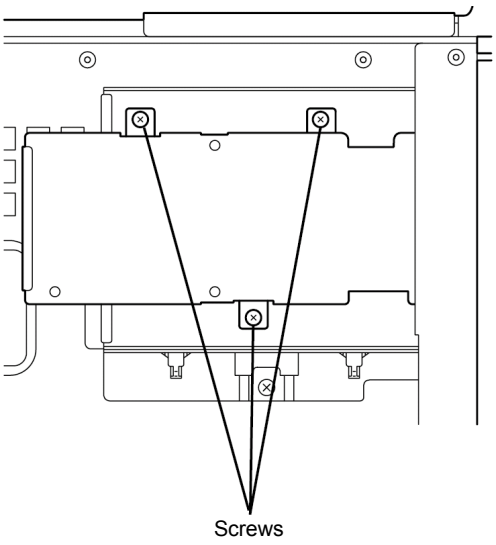


IMPORTANT: Carefully remove the riser card so as not to contact with any other components.

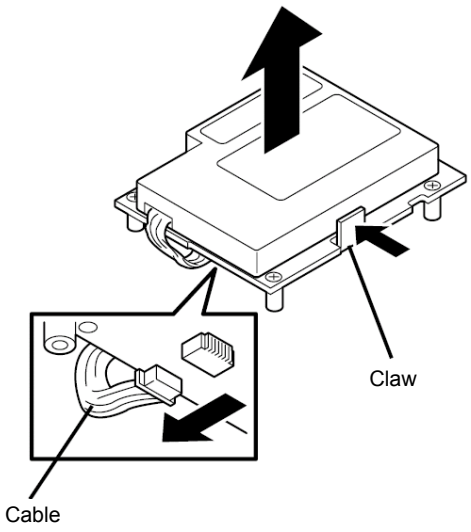
5. Disconnect cables from the RAID Controller.
6. Remove the RAID Controller from the riser card.



7. Remove the three screws from the battery bracket, then remove the battery bracket.

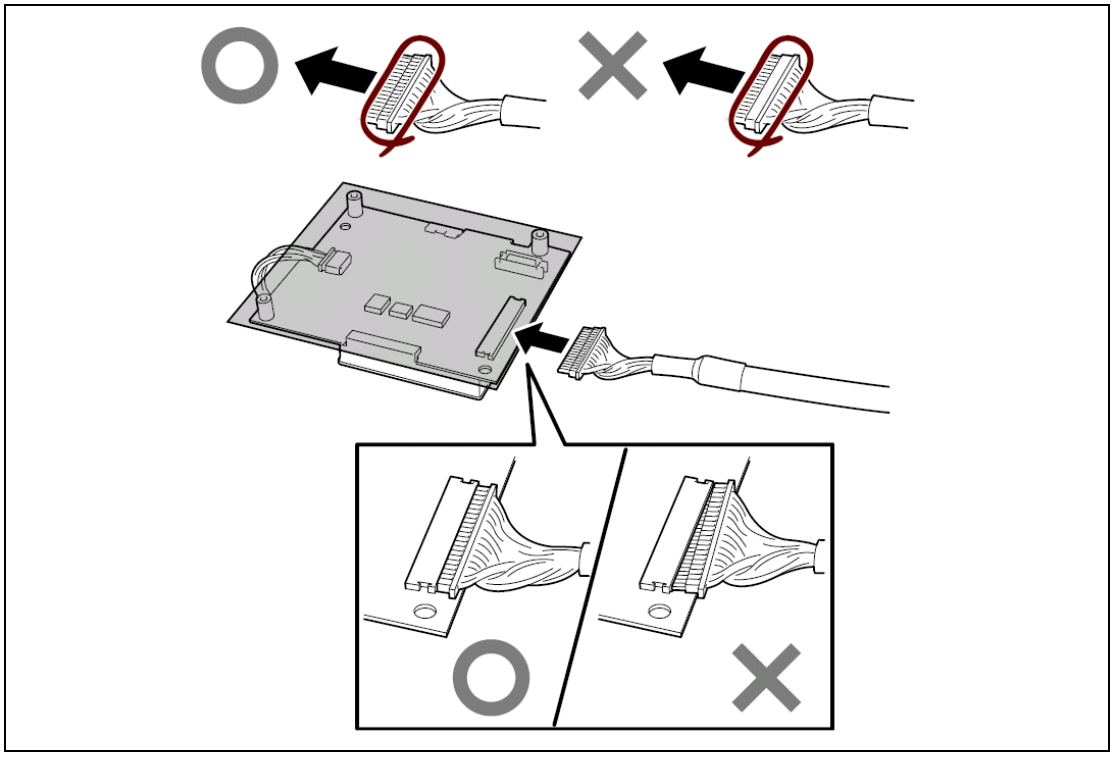


8. Split the additional battery so that the battery is apart from the base board by pushing the claw in the direction of arrow mark, then disconnect the cable.

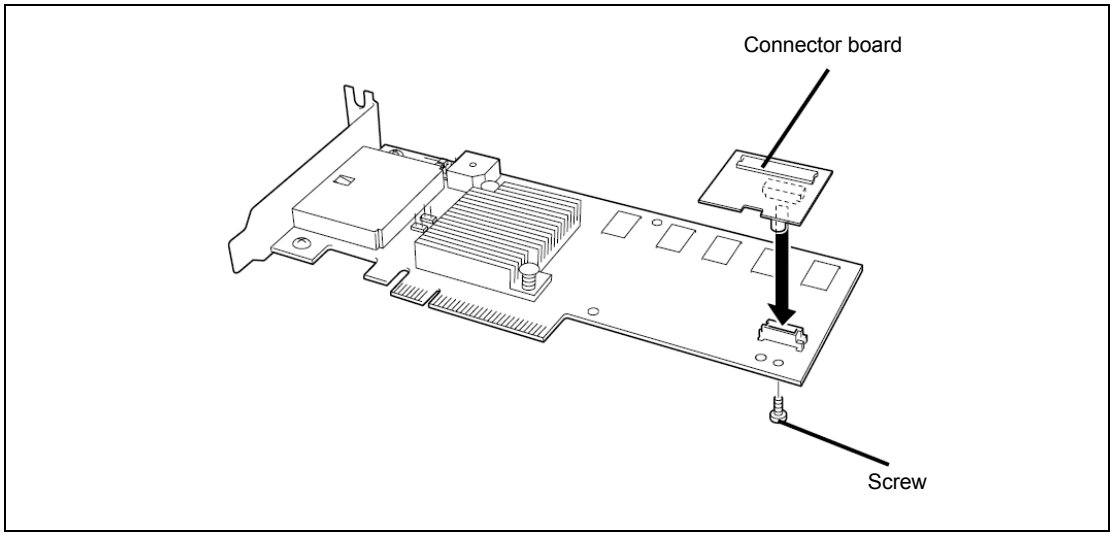


9. Connect the cable to the additional battery.

Be aware of the face of the connector according to the figure below.

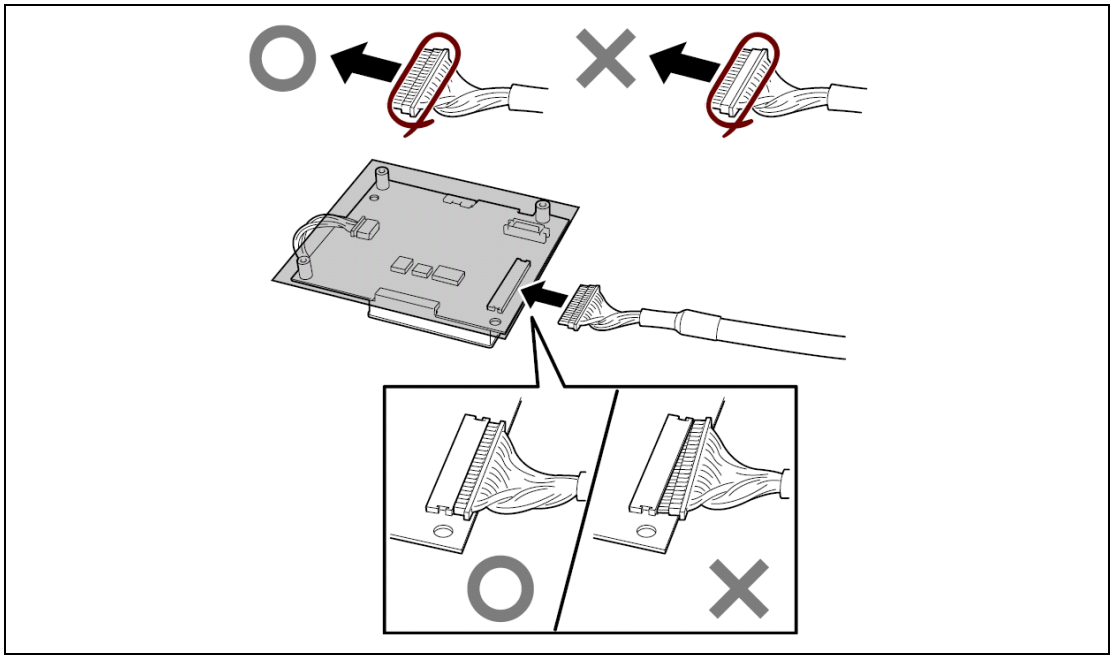


10. Install the connector board provided with the additional battery to the RAID Controller.

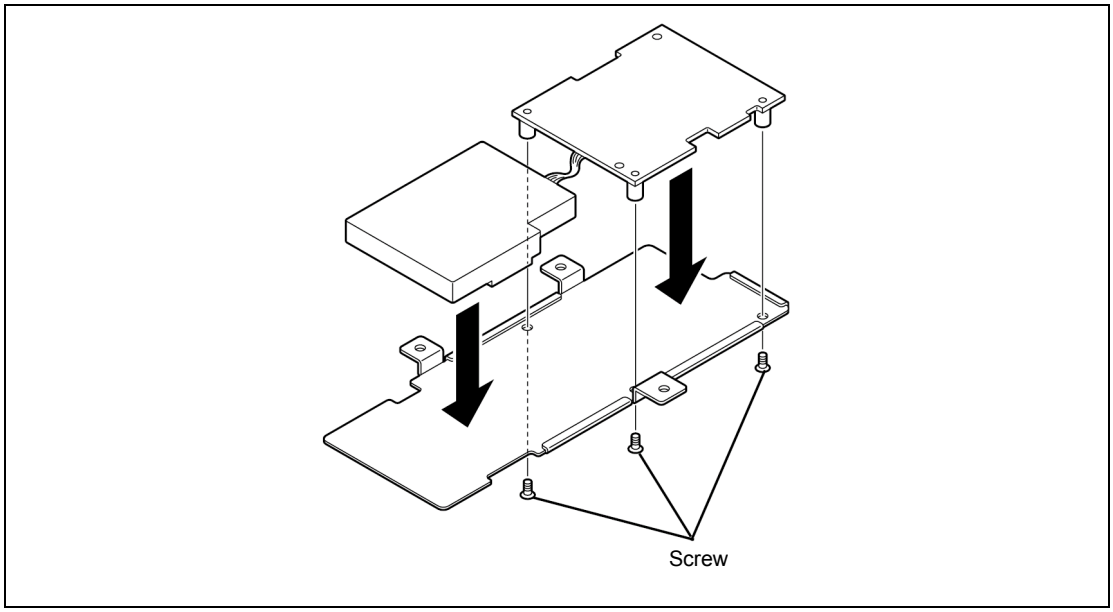


11. Connect the cable to the additional battery.

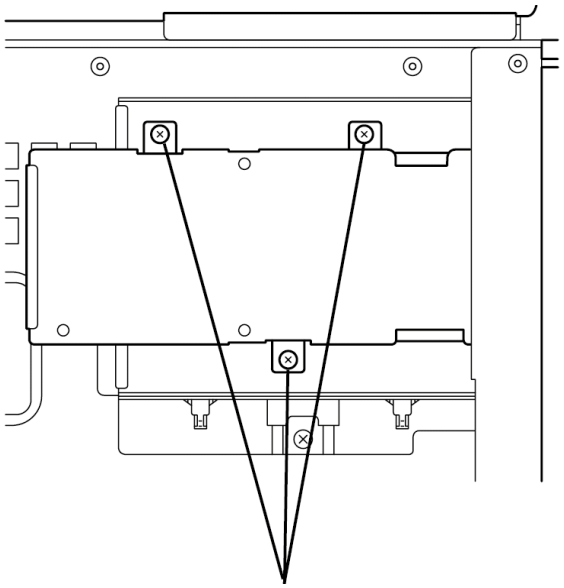
Be aware of the face of the connector according to the figure below.



12. Install the battery to the battery bracket, and secure the base board with three screws.

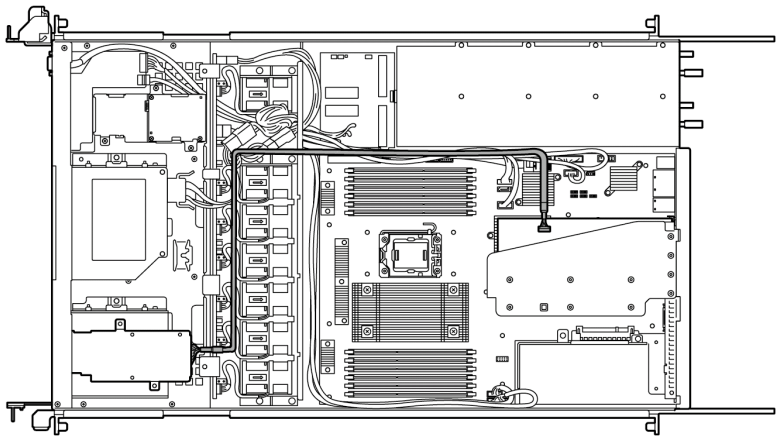


13. Secure the battery bracket on which the additional battery is installed to the server chassis with screws.

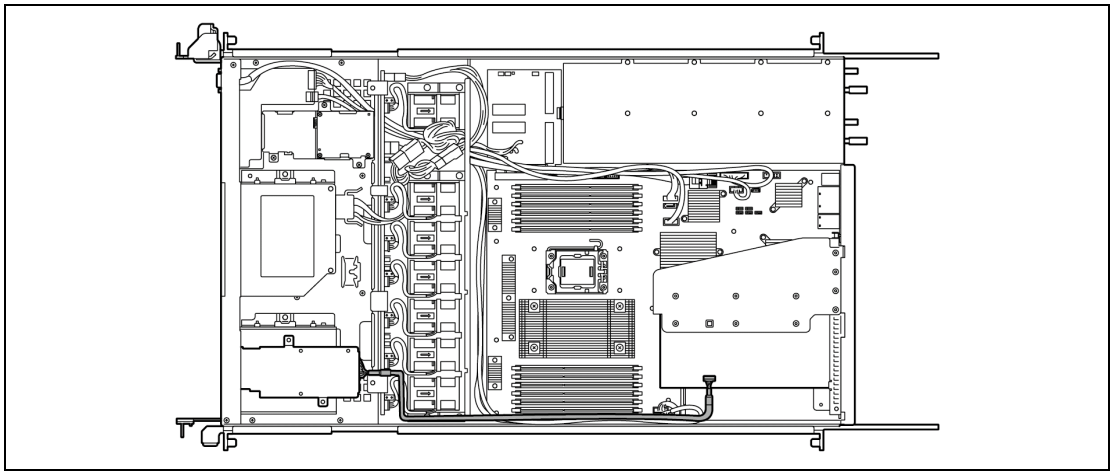


14. Route the cable as shown in the figure below.

– When connecting with RAID controller in low-profile slot

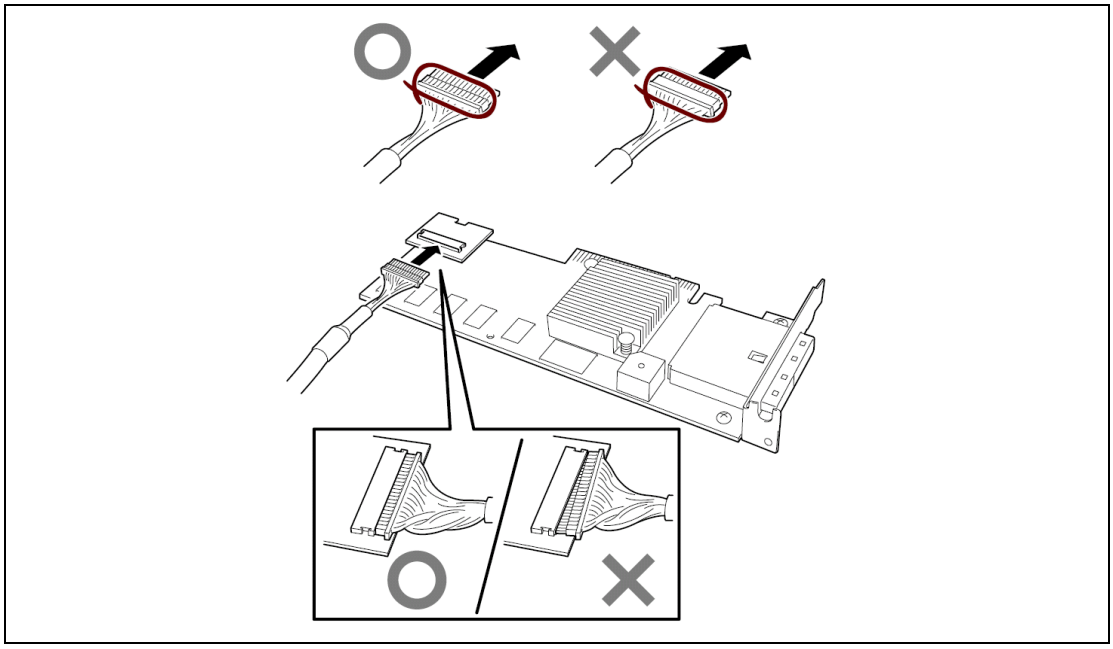


– When connecting with RAID controller in full-height slot



15. Connect the cable to the connector board installed on the RAID Controller.

Be aware of the face of the connector according to the figure below.



16. Install the components you removed previously.

Removing Additional Battery for RAID Controller

Remove the additional battery for RAID Controller in reverse order of the installation steps.

USE OF INTERNAL HARD DISK DRIVES IN THE RAID SYSTEM

Using the RAID Controller allows you to use hard disk drives in the device bays of the server and those in the optional expansion disk cabinet in the RAID System.

IMPORTANT:

- Making hard disk drives in the RAID System or changing the RAID level initializes hard disk drives. If the hard disk drive to be configured in the RAID System has your valuable data stored, make sure to make a backup copy of the data in another hard disk drive before installing the RAID Controller and configuring the RAID System.
- More than one hard disk drive is required to configure a Logical Drive.
- Use hard disk drives of the same capacity and performance (e.g., revolution) for each pack to configure them in the RAID System.

NOTES:

- Make sure of RAID levels and hard disk drives available for the RAID Controller to choose an appropriate controller.
- A Logical Drive except for RAID0 increases disk reliability. However, the actually available capacity becomes smaller than the total hard disk drive capacity in the Logical Drive.

3.5-inch Disk Model

You can build a RAID System by using the Onboard RAID Controller (LSI Embedded MegaRAID) or optional RAID Controller (N8103-116A/117A/118A).

Onboard RAID Controller (LSI Embedded MegaRAID)

If the setting of RAID configuration jumper switch on mother board is changed, the internal hard disk drives can be detected as RAID hard disk drives. See the figure below.

Optional RAID Controller (N8103-116A/117A/118A)

Your server can include the optional RAID Controller (N8103-116A/117A/118A). The optional RAID Controller can control the internal hard disk drives as the RAID System. To use the hard disk drives in a RAID System, reconnect the hard disk drive interface cable on the mother board.

At the factory, the interface cable is connected to the SATA HDD connector on the mother board. Refer to the manual coming with optional RAID Controller (N8103-116A/117A/118A) for details.

IMPORTANT: The RAID Controller board is extremely sensitive to static electricity. Make sure to touch the metal frame of the Server to discharge static electricity from your body before handling the RAID Controller. Do not touch the RAID Controller terminals or on-board parts by a bare hand or place the RAID Controller directly on the desk. For static notes, see the section "Anti-static Measures" described earlier.

NOTE: Before installing an optional RAID Controller, run the SETUP utility, select [Advanced] → [PCI Configuration], and confirm that [Enabled] is set for the parameter [PCI Slot xx ROM] (xx: PCI slot number).

Installation

See "PCI Board" in this chapter and manual that comes with the optional RAID Controller for the installation of a RAID Controller (N8103-116A/117A/118A).

IMPORTANT:

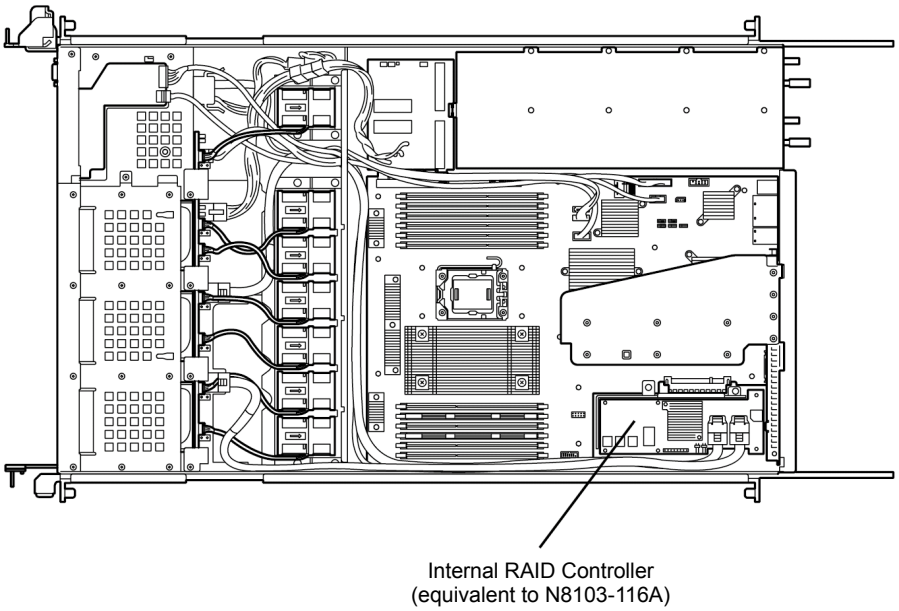
- A riser card for low-profile PCI board differs from the one for full-height PCI board. Before installing a PCI board, make sure of the board specification.
- Some RAID Controller has LED cable connector to be used for indication of disk access. However, this server is not equipped with LED cable connector.
- To use internal hard disk drives in RAID System by connecting the RAID Controller to the full-height riser card, first connect the cable, then connect the riser card with mother board.
- When the RAID Controller is connected, the boot priority specified in BIOS SETUP utility must be eighth or younger. If specified ninth or later, the configuration menu of RAID Controller will fail to start.

2.5-inch Disk Model

To build a RAID System, use the Internal RAID Controller (equivalent to N8103-116A).

The hard disk drive bays are connected to the Internal RAID Controller (equivalent to N8103-116A) at the factory.

Standard Configuration



Use WebBIOS to configure the RAID System. See Chapter 4 for details.

Notice

Observe the following notes on configuring a RAID System:

- The installed hard disk drives (SAS drives or SATA drives) must the same capacity and the same rotational speed. (The minimum number of required disks depends on the configuration of RAID (Redundant Arrays of Inexpensive [Independent] Disks).)
- Select/set a RAID level "RAID0", "RAID1", "RAID5", or "RAID6".

> **IMPORTANT:** To use RAID5, RAID50, or RAID6, N8103-119 is required.

When installing a system in an internal hard disk drive, you should use "Express Setup" to perform all the procedures for RAID System configuration, OS installation, and then OS setup.

Use Express Setup even when not installing a system. Start Express Setup, select [OS Selection] → [Others]. The installer automatically performs all the procedures for RAID System configuration, and then maintenance utility installation.

When making the setup in manual mode, use the RAID System configuration utility in the chip on the board. You can start the utility during execution of POST that automatically starts immediately after you turn on the server power switch. For details, see the document in the NEC EXPRESSBUILDER DVD provided with the server. (The utility varies depending on the RAID Controller.) For details on the data transfer rate, RAID, and RAID System configuration, see the manual provided with the RAID Controller as well as the document.

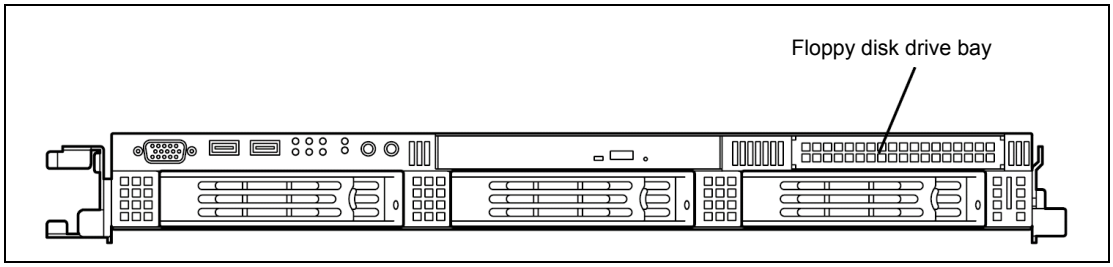
> **IMPORTANT:** When N8103-116A/118A is installed, do not let the system enter hibernation or standby mode.

FLOPPY DISK DRIVE

The server of 3.5-inch disk model has a bay to install an optional floppy disk drive on its front panel.

IMPORTANT:

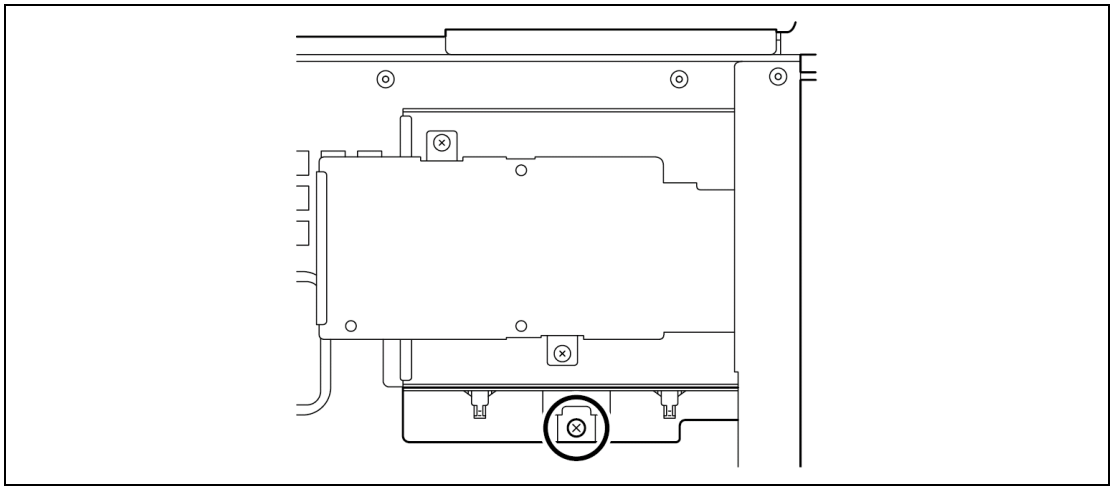
- Be sure to use the floppy disk drive authorized by NEC.
- You cannot install the floppy disk drive if an additional battery for RAID controller is installed.



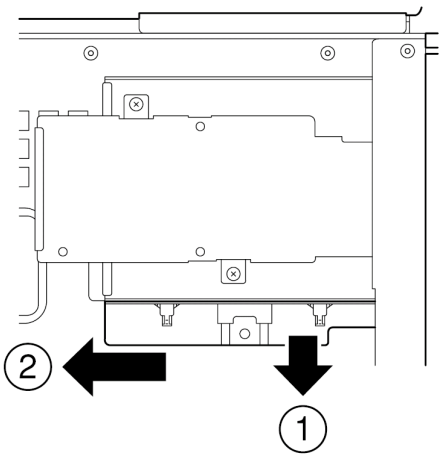
Installation

Take the following steps to install an optional floppy disk drive.

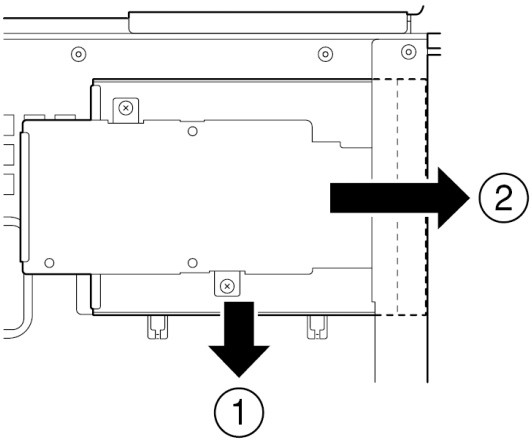
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Remove a screw from the stay that secures the floppy disk drive bracket.



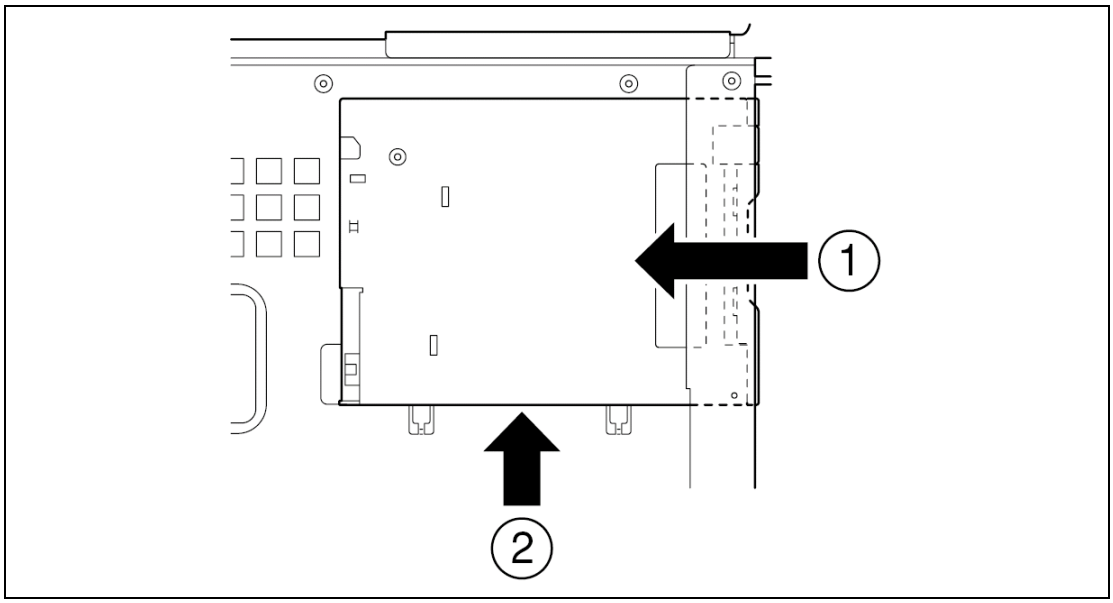
5. Slide the stay for bracket to the direction of the arrow marks shown in the figure below, and remove the stay.



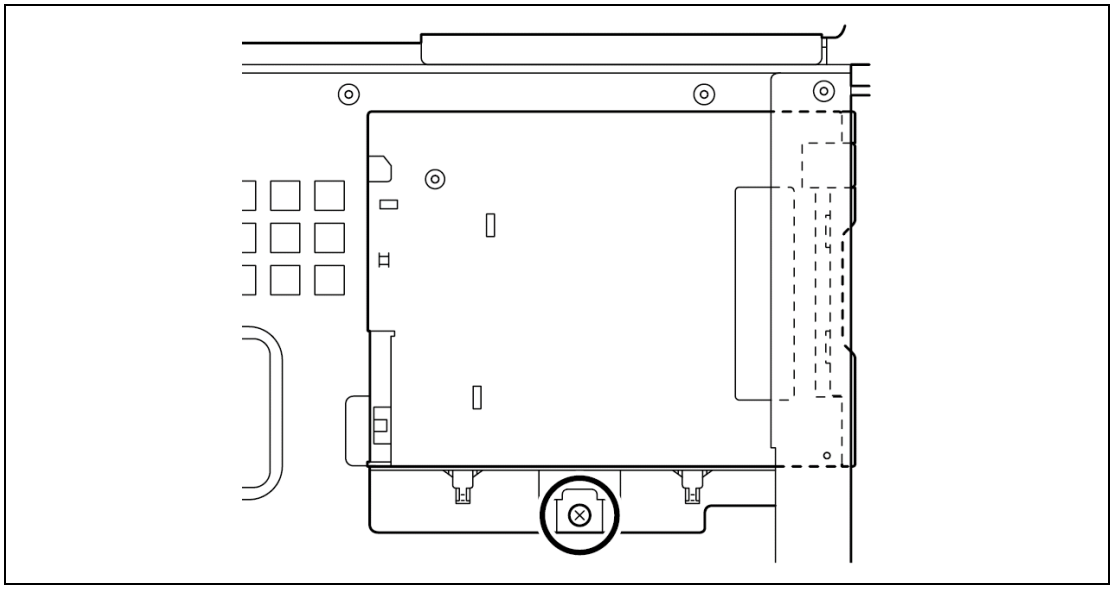
6. Remove the floppy disk drive bracket by sliding it to the direction of the arrow marks shown in the figure below.



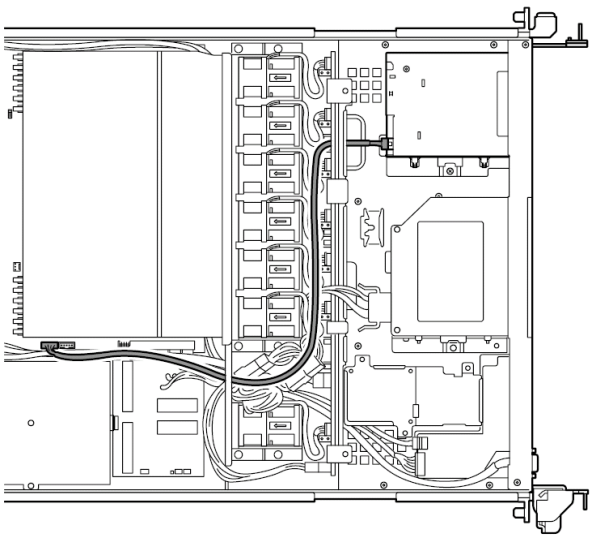
7. Put and slide the floppy disk drive in the order shown by arrow marks in the figure below. Engage the screw holes of the floppy disk drive with the claws on the server chassis, and fix the floppy disk drive.



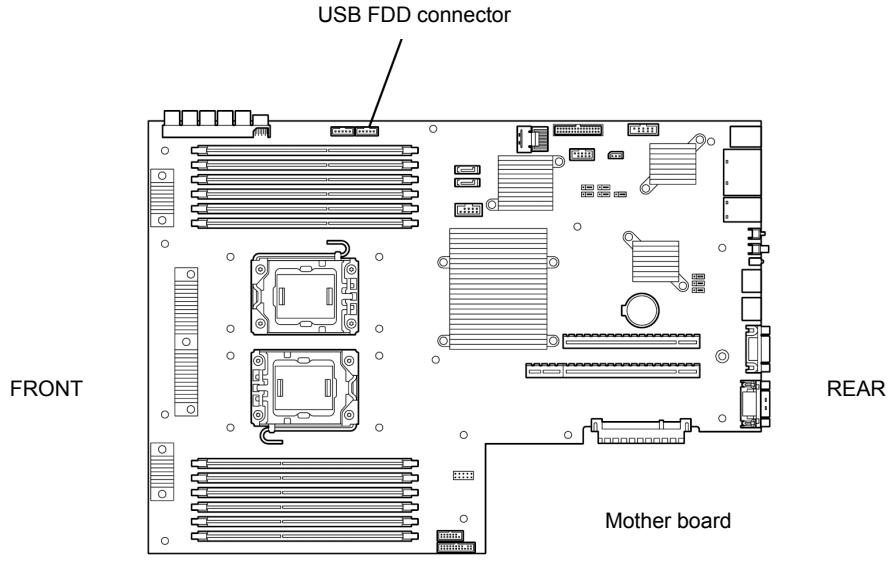
8. Align the claw of stay with the screw hole on the floppy disk drive, and secure it with a screw.



9. Route the cable as shown in the figure below.



10. Connect the cable to the USB FDD connector on mother board.



11. Install the components you removed previously.

Removal

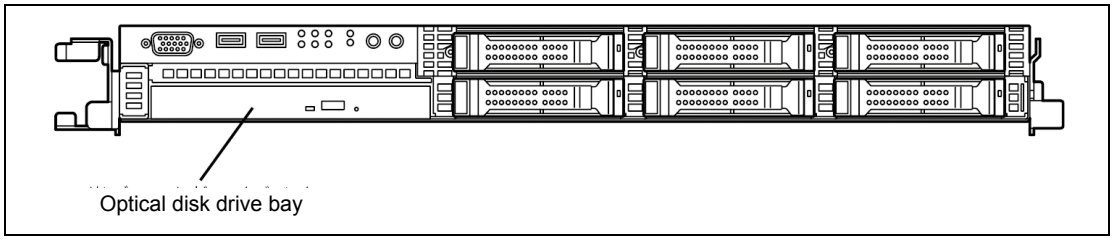
Remove the floppy disk drive in reverse order of the installation steps.

OPTICAL DISK DRIVE

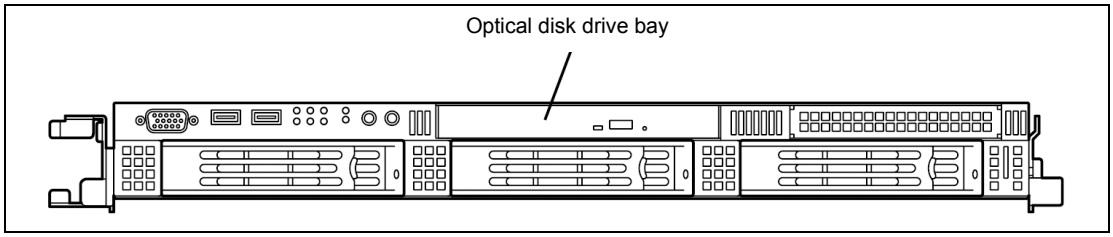
You may replace the factory-installed optical disk drive with an optional DVD SuperMULTI drive.

IMPORTANT: Be sure to use the DVD SuperMULTI drive authorized by NEC.

2.5-inch Disk Model



3.5-inch Disk Model

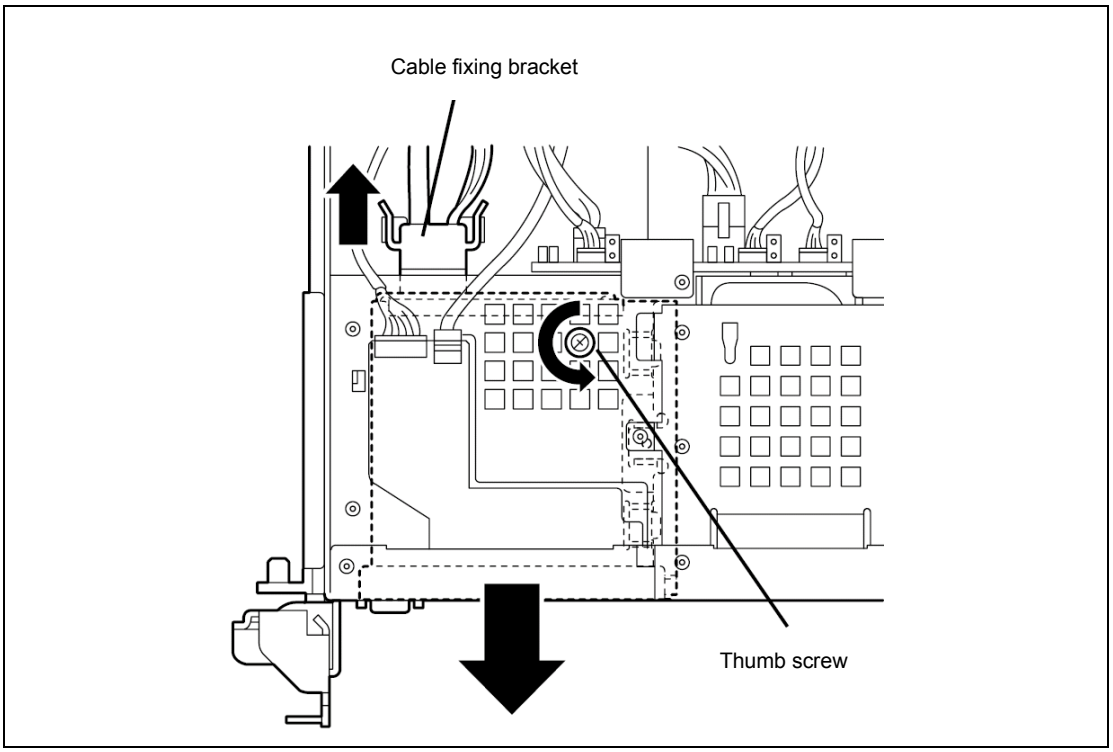


Replacement Procedure

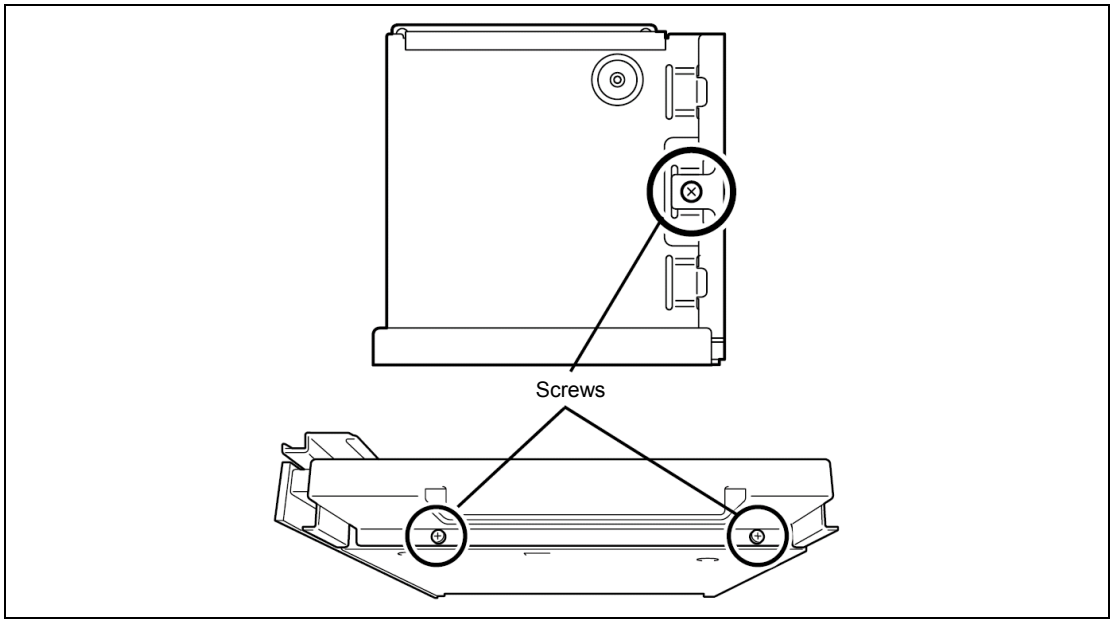
Take the following steps to install the optional DVD SuperMULTI drive.

2.5-inch Disk Model

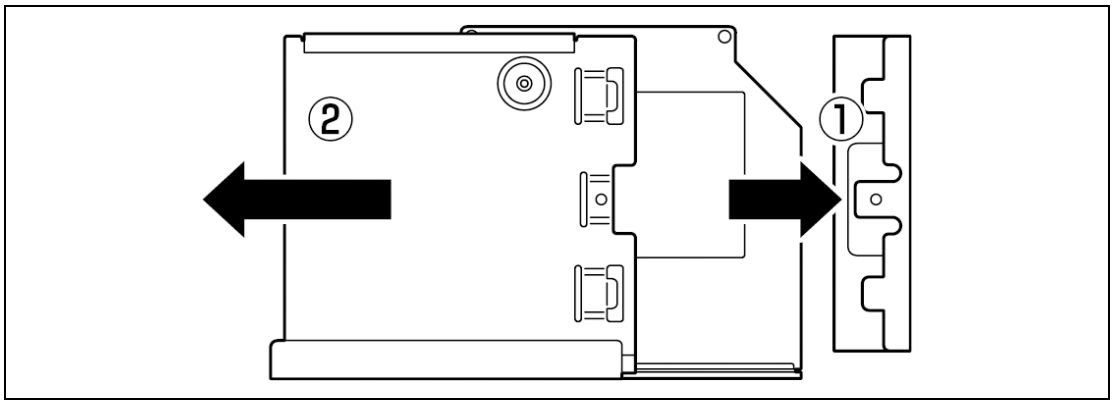
1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Remove the cable while holding both ends of cable fixing bracket of the optical disk drive.
5. Loosen the thumb screw, and pull out the optical disk drive bracket to the direction of the arrow mark shown in the figure below.



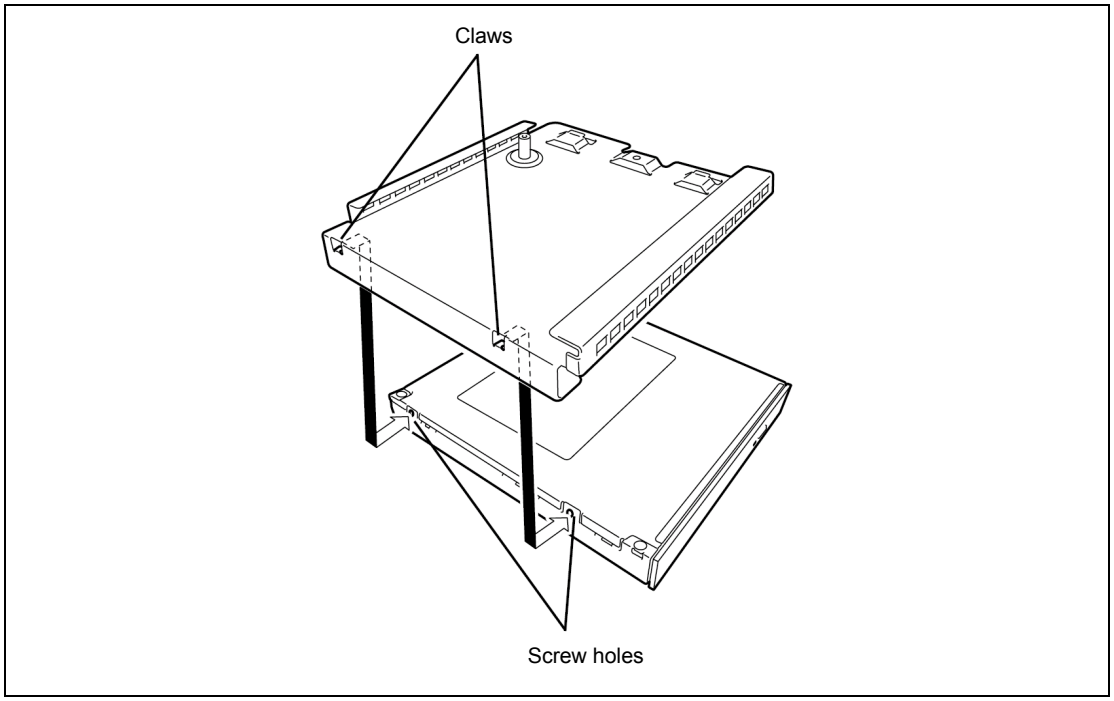
6. Remove the three screws from the optical disk drive, then remove the optical disk drive.



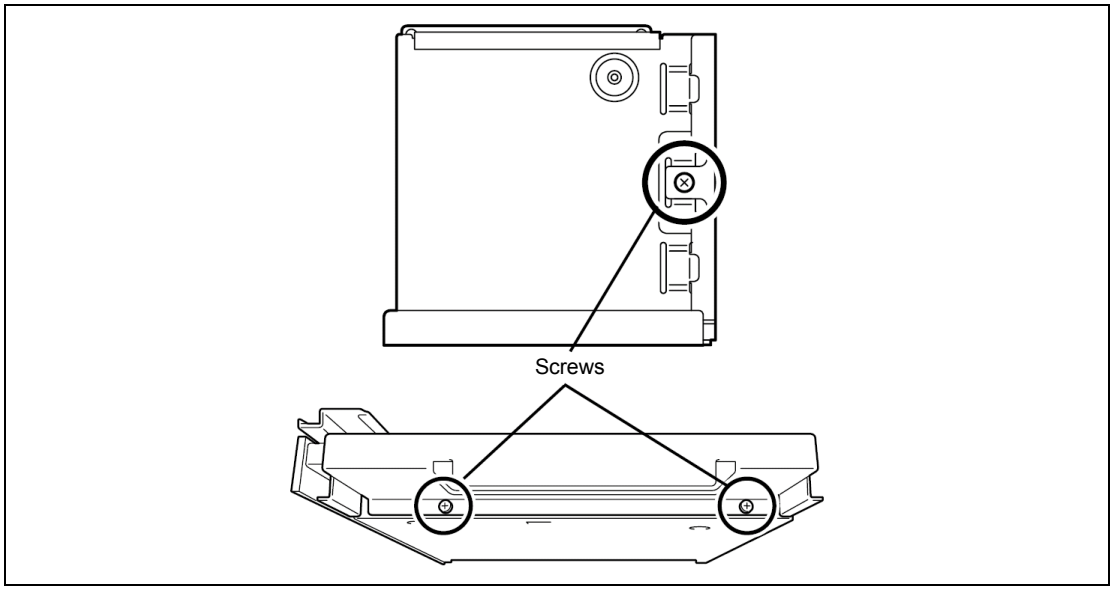
7. Remove the optical disk drive bracket to the direction of the arrow marks shown in the figure below.



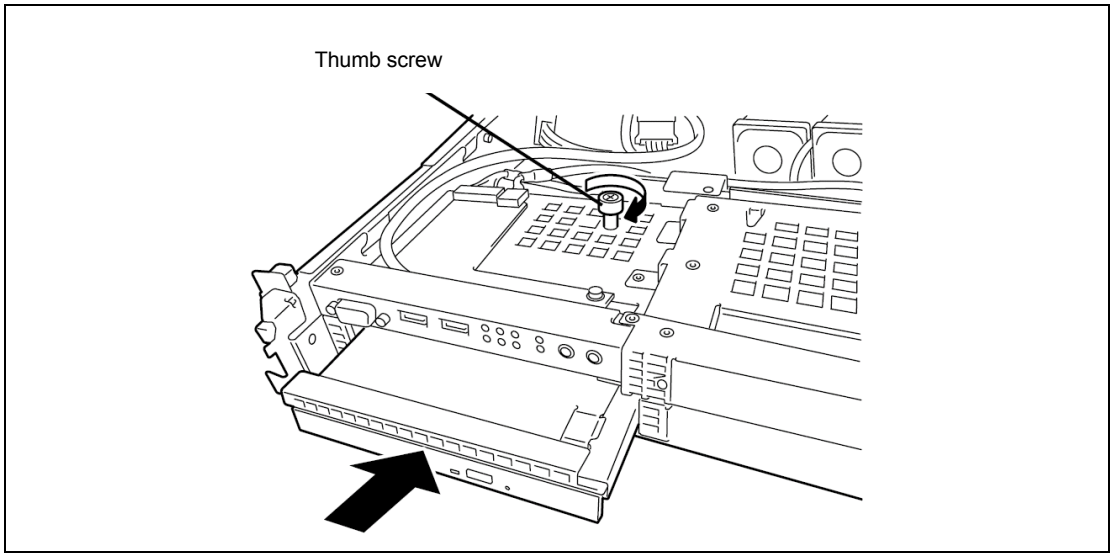
8. Align the screw holes on the optional DVD SuperMULTI drive with claws on the optical disk drive bracket (A).



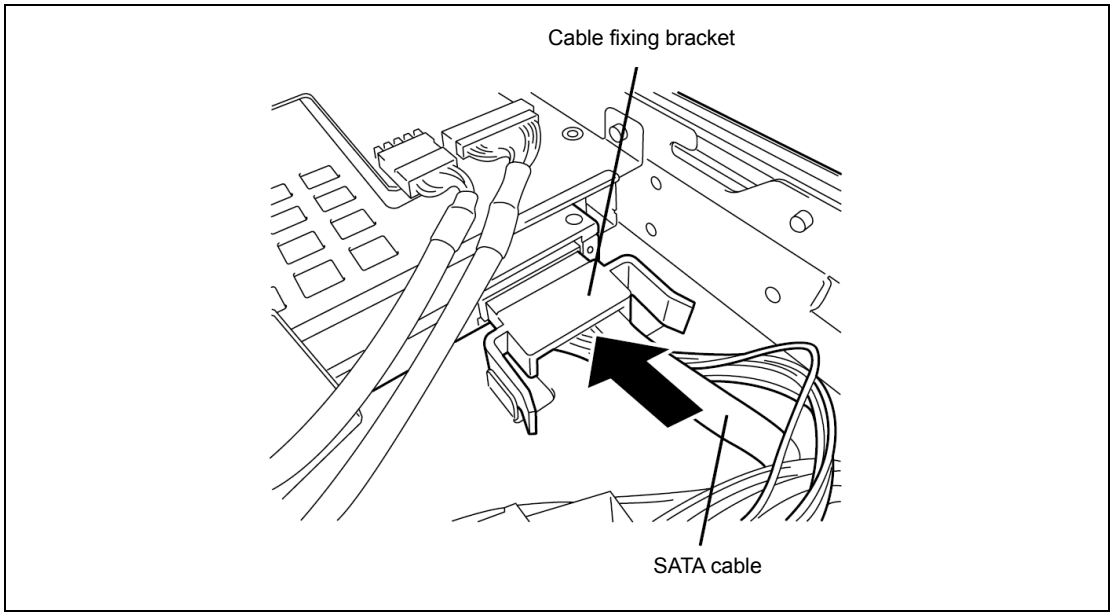
9. Secure the drive with the three screws that were used for optical disk drive bracket (B).



10. Install the optical disk drive bracket with optional DVD SuperMULTI drive mounted to the server, then tighten the thumb screw to secure.



11. Connect the SATA cable to optional DVD SuperMULTI drive. Then, fix the SATA cable with cable fixing bracket.

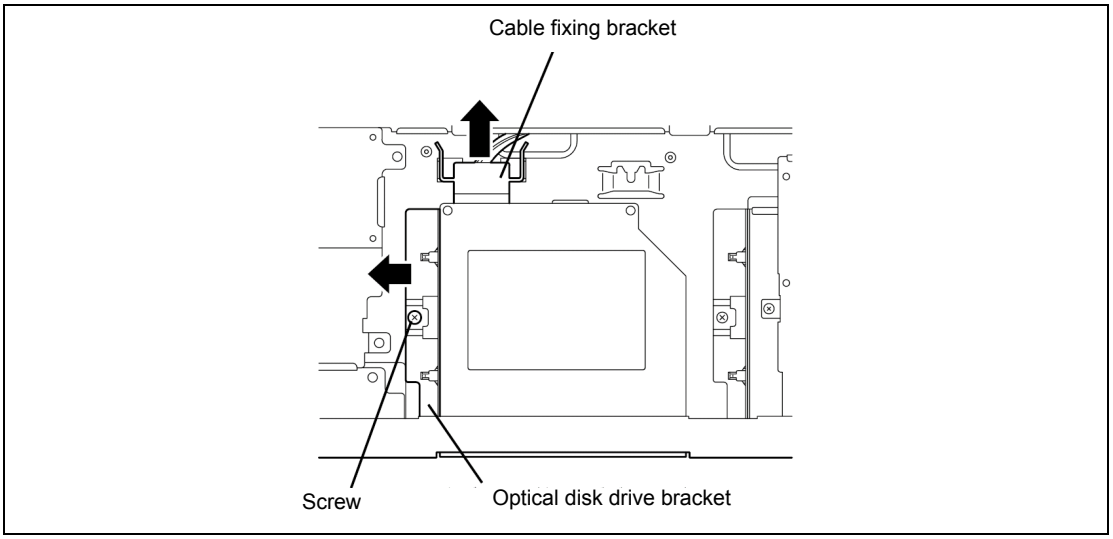


12. Install the components you removed previously.

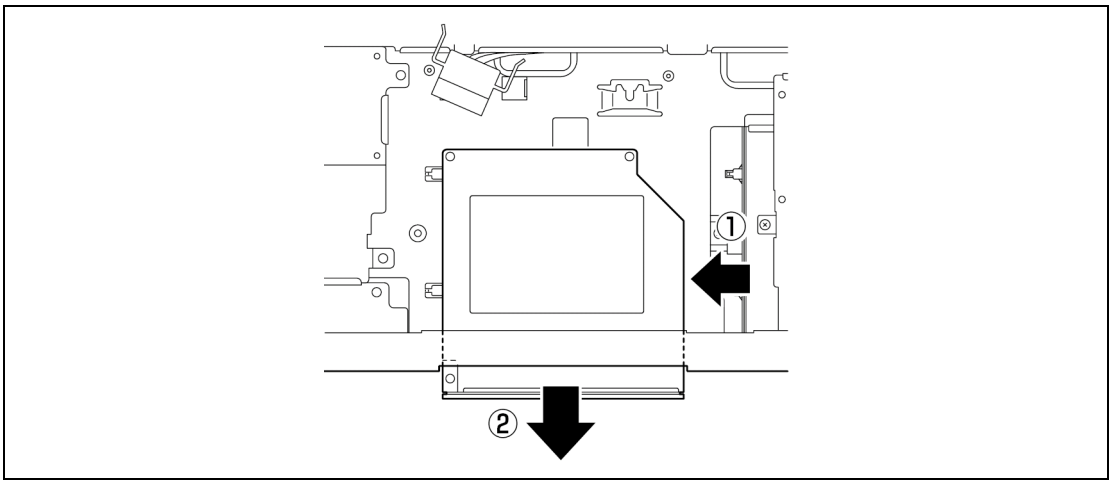
3.5-inch Disk Model

1. See the section "Preparing for Installation and Removal" described earlier to prepare.
2. Pull out the server from the rack.
3. Remove the top cover.
4. Remove the cable while holding both ends of cable fixing bracket.
5. Remove the screw from the optical disk drive bracket, then remove the optical disk drive bracket.

   Move the bracket to the left, viewed from the front of server.

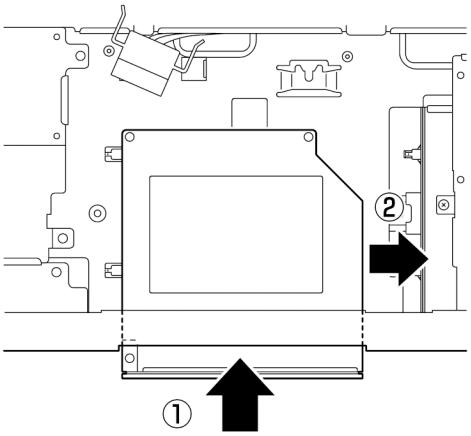


6. Remove the optical disk drive by sliding it to the direction shown by the arrow mark in the figure below.

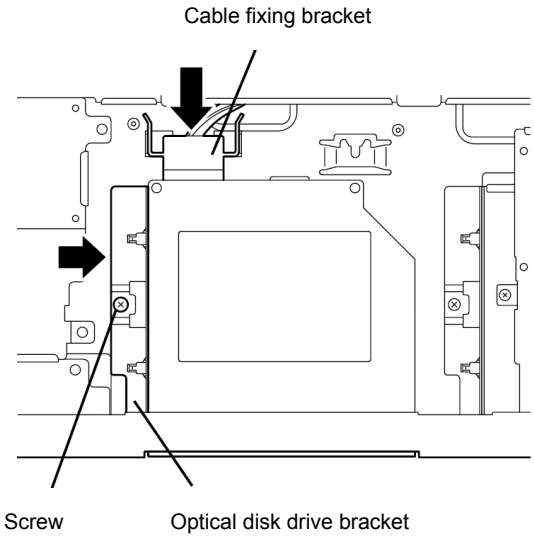


7. Insert the optional DVD SuperMULTI drive into the slot.

Align the screw holes on the optional DVD SuperMULTI drive with claws on the slot, then move the drive to the right.



8. Secure the optional DVD SuperMULTI drive with optical disk drive bracket. Then, tighten the screw.



9. Connect the SATA cable to optional DVD SuperMULTI drive. Then, fix the SATA cable with cable fixing bracket.

10. Install the components you removed previously.

(This page is intentionally left blank.)

Appendix A

Specifications

3.5-inch disk model

Item		NEC Express5800/R120a-1 N8100-				
		1516F	1517F	1518F	1519F	1520F
CPU	Type	Intel® Xeon® Processor E5502	Intel® Xeon® Processor E5504	Intel® Xeon® Processor E5520	Intel® Xeon® Processor E5550	Intel® Xeon® Processor E5570
	Clock	1.86 GHz	2 GHz	2.26 GHz	2.66 GHz	2.93 GHz
	3rd Cache	4 MB		8 MB		
	Standard	1				
	Maximum	2				
	Intel® Hyper Threading Technology	Unsupported		Supported		
	Intel® Turbo Boost Technology	Unsupported		Supported		
	Intel® 64	Supported				
	Intel® Virtualization Technology	Supported				
Chipset		Intel® 5520 + Intel 82801JIR				
Memory	Memory module	DDR3-1066, x4 SDDC, memory mirroring feature *1, LockStep feature *1				
	Minimum	2 GB (1 GB x2)				
	Maximum	96 GB (8 GB x12) *2				
	Error check	ECC				
Auxiliary storage device	Hard disk drive (standard)	None				
	Hard disk drive (maximum)	SATA: 3 TB (1 TB x3), SAS: 1.35 TB (450 GB x3)				
	Hot-plug hard disk drive	Supported				
	Optical disk drive	Standard: DVD-ROM drive x1 (DVD: x3 to x8 speed, CD: x10 to x24 speed) Option: DVD Super Multi x1 (to be replaced with DVD-ROM drive)				
	Floppy disk drive	Option: 3.5-inch internal FDD (2-mode), or 3.5-inch external FDD (2-mode)				
Additional bay	Hard disk drive bay	3 slots				
	3.5-inch floppy disk drive bay	1 slot				
Additional slot	Full-height	Standard: 1 slot (PCI Express 2.0 (x16) x 1 slot) When option riser is installed: 1 slot (64bit PCI-X (133MHz) x1 slot)				
	Low-profile	Standard: 1 slot (PCI Express 2.0 (x8) x1 slot) When option riser is installed: 1 slot (PCI Express 2.0 (x8) x1 slot)				
Display	Graphics accelerator	ServerEngines™ 2nd Gen Server Management Controller embedded on mother board				
	Video RAM	32 MB				
	Graphic display	640x480, 800x600, 1,024x768, 1,280x1,024: 16,770,000 colors max				

Item		NEC Express5800/R120a-1 N8100-				
		1516F	1517F	1518F	1519F	1520F
LAN interface		2 ports (1000Base-T/100Base-TX/10Base-T) and 1 management port (100Base-TX/10Base-T)				
Interface	Keyboard/mouse	MINI DIN 6-pin connector (1 port)				
	Monitor	MINI D-Sub 15-pin (2 port (1 for front panel, 1 for rear panel))				
	Serial	D-Sub-9-pin (1 port), RS-232C compliant				
	USB2.0	4 ports (2 for front panel, 2 for rear panel)				
	Network	1000Base-T/100Base-TX/10Base-T (RJ-45, 2 ports) 100Base-TX/10Base-T (1 port for management port)				
Redundant power supply		Supported (option)				
Redundant fan		Supported (standard)				
External dimensions (mm)	Front bezel / Inner rail / Protruding portion excluded	428 (width) x 722 (depth) x 44 (height)				
	Front bezel / Inner rail / Protruding portion included	485 (width) x 823 (depth) x 44 (height)				
Weight (Max.)		16 kg (21 kg)				
Power supply		AC 100V±10%, AC 200V±10%, 50/60Hz±1Hz				
Environmental requirements	Temperature	10 to 35ºC (operating), -10 to 55ºC (non-operating, storage)				
	Humidity	20 to 80% RH (no condensation)				

*1 The memory mirroring and LockStep features are not available in the normal memory configuration. Contact your service representative for details.
*2 In 2-CPU configuration. Max. 48 GB in 1-CPU configuration

2.5-Inch disk models

Item		NEC Express5800/R120a-1 N8100-				
		1511F	1512F	1513F	1514F	1515F
CPU	Type	Intel® Xeon® Processor E5502	Intel® Xeon® Processor E5504	Intel® Xeon® Processor E5520	Intel® Xeon® Processor E5550	Intel® Xeon® Processor E5570
	Clock	1.86 GHz	2 GHz	2.26 GHz	2.66 GHz	2.93 GHz
	3rd Cache	4 MB		8 MB		
	Standard	1				
	Maximum	2				
	Intel® Hyper Threading Technology	Unsupported		Supported		
	Intel® Turbo Boost Technology	Unsupported		Supported		
	Intel® 64	Supported				
	Intel® Virtualization Technology	Supported				
Chipset		Intel® 5520 + Intel 82801JIR				
Memory	Memory module	DDR3-1066, x4 SDDC, memory mirroring feature [*1], LockStep feature [*1]				
	Minimum	2 GB (1 GB x2)				
	Maximum	96 GB (8 GB x12) [*2]				
	Error check	ECC				
Auxiliary storage device	Hard disk drive (standard)	None				
	Hard disk drive (maximum)	SAS:879GB (146.5 GB x6)				
	Hot-plug hard disk drive	Supported				
	Optical disk drive	Standard: DVD-ROM drive x1 (DVD: x3 to x8 speed, CD: x10 to x24 speed) Option: DVD Super Multi x1 (to be replaced with DVD-ROM drive)				
	Floppy disk drive	Option: 3.5-inch internal FDD (2-mode), or 3.5-inch external FDD (2-mode)				
Additional bay	Hard disk drive bay	6 slots				
	3.5-inch floppy disk drive bay	None				
Additional slot	Full-height	Standard: 1 slot (PCI Express 2.0 (x16) x 1 slot) When option riser is installed: 1 slot (64bit PCI-X (133MHz) x1 slot)				
	Low-profile	Standard: 1 slot (PCI Express 2.0 (x8) x1 slot) When option riser is installed: 1 slot (PCI Express 2.0 (x8) x1 slot)				
Display	Graphics accelerator	ServerEnginesT™ 2nd Gen Server Management Controller embedded on mother board				
	Video RAM	32 MB				
	Graphic display	640x480, 800x600, 1,024x768, 1,280x1,024: 16,770,000 colors max				
LAN interface		2 ports (1000Base-T/100Base-TX/10Base-T) and 1 management port (100Base-TX/10Base-T)				
Interface	Keyboard/mouse	MINI DIN 6-pin connector (1 port)				
	Monitor	MINI D-Sub 15-pin (2 port (1 for front panel, 1 for rear panel))				
	Serial	D-Sub-9-pin (1 port), RS-232C compliant				
	USB2.0	4 ports (2 for front panel, 2 for rear panel)				
	Network	1000Base-T/100Base-TX/10Base-T (RJ-45, 2 ports) 100Base-TX/10Base-T (1 port for management port)				
Redundant power supply		Supported (option)				
Redundant fan		Supported (standard)				

Item			NEC Express5800/R120a-1 N8100-				
			1511F	1512F	1513F	1514F	1515F
External dimensions (mm)	Front bezel / Inner rail / Protruding portion excluded		428 (width) x 722 (depth) x 44 (height)				
	Front bezel / Inner rail / Protruding portion included		485 (width) x 823 (depth) x 44 (height)				
Weight (Max.)			16 kg (21 kg)				
Power supply			AC 100V±10%, AC 200V±10%, 50/60Hz±1Hz				
Environmental requirements		Temperature	10 to 35ºC (operating), -10 to 55ºC (non-operating, storage)				
		Humidity	20 to 80% RH (no condensation)				

*1 The memory mirroring and LockStep features are not available in the normal memory configuration. Contact your service representative for details.
*2 In 2-CPU configuration. Max. 48 GB in 1-CPU configuration

Appendix B

Other Precautions

Transfer Rate of the On-board LAN controller

The mother board includes the two network interface controllers that supports 10Base-T, 100Base-TX, and 1000Base-T networks and a capable of full or half duplex.

The both controllers can automatically detect and switch for network speed and transfer mode connected to the HUB. However, for proper network operation, specify the "Link Speed & Duplex" value the same as the value specified for HUB.

Server Management Software

The NEC EXPRESSBUILDER DVD that comes with the server contains the NEC ESMPRO utility.

NEC recommends that you should install the NEC ESMPRO for effective use of the reliability enhancement features of the server.

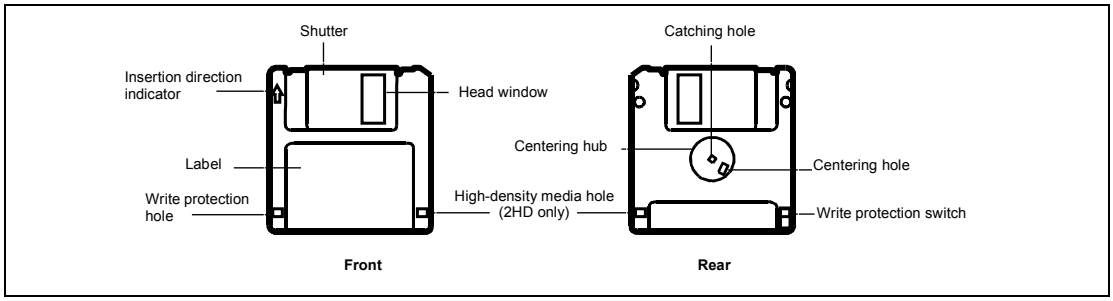
Floppy Disk

The following describes use of the floppy disk.

Floppy disk type

The server uses 3.5-inch floppy disks. You can use the following two types of 3.5-inch floppy disks:

- 2HD floppy disk (double-sided high-density track type)
  Stores data of 1.44MB.
- 2DD floppy disk (double-sided double-density track type)
  Stores data of 720KB.



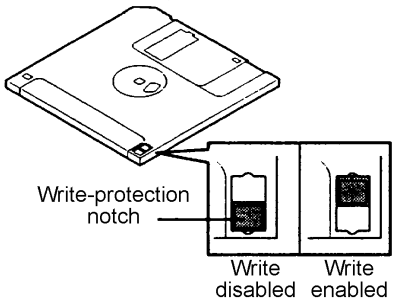
Notes on use

The floppy disk is an important data storage media with delicate structure and requires care. Keep the following notes in mind to use it:

- Insert the floppy disk into the floppy disk drive gently as far as it goes.
- Attach the label to the correct position.
- Do not write anything directly onto the disk surface with a pencil or ball-point pen.
- Do not open the shutter.
- Do not use the floppy disk in a dusty place.
- Do not place anything on the floppy disk.
- Do not leave the floppy disk in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- Do not leave the floppy disk with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the floppy disk near any form of liquid or a chemical or in a place where a chemical may be accidentally sprayed over them.
- Do not place any magnetic objects (e.g., magnet) near the floppy disk.
- Do not clip the floppy disk or drop it.
- Keep the floppy disk in a floppy disk case that protects it from magnetism and dust.

- Write-protection

  A floppy disk has a write-protect switch that prevents the stored data from accidental erasure.



  You can read data from a write-protected floppy disk, but you cannot save data into the floppy disk or format it. NEC recommends that you should write-protect any floppy disk containing valuable data unless you are about to save data.

  To write-protect a 3.5-inch floppy disk, use the write-protect switch provided on its back.

- Disk format

  To write data into a floppy disk, the floppy disk must be "formatted." "Formatting" is to initialize the floppy disk and make it available for the system environment (operating system).

> **IMPORTANT:**
>
> - Formatting a used floppy disk clears all the data contained in it, if any.
> - Formatting a floppy disk from the DOS command line is not available with the server. Use a formatted floppy disk to work with it on the DOS command line.

  The format method depends on your operating system. Refer to the manual that comes with your operating system for details.

- Data backup

  "Data backup" is to copy data stored in a media into another media (e.g., floppy disk, digital audio tape, or magnet-optical disk).

> **IMPORTANT:** Make sure to make a back-up copy of every floppy disk, if provided.

  The floppy disk is a very delicate storage media. Dust or thermal changes, as well as operator's misconduct or server failures, may cause loss of data. To avoid loss of data, NEC recommends that you should make a back-up copy of your valuable data on a regular basis.

CD/DVD Discs

Keep the following notes in mind to use the disc for the server:

- Press the center of the storage case to remove the disc from the case.
- Do not drop the disc.
- Do not place anything on the disc or bend the disc.
- Do not attach any label onto the disc.
- Do not touch the signal side (nothing is printed on this side) with your hand.
- Place the disc with its printed side upward and gently put it on the tray.
- Do not scratch the disc or write anything directly on it with a pencil or ball-point pen.
- Do not leave the disc with foods and drinks, or in a place exposed to cigarette smoke.
- Do not leave the disc in a high-temperature place (e.g., place exposed to direct sunlight or close to a heater).
- When dust or fingerprints are attached on the disc, wipe the disc from its center to edge with a dry soft cloth slowly and gently.
- Use the disc cleaner to clean the disc. Do not use record spray/cleaner, benzene, or thinner.
- Keep the disc in a disc case when not in use.

Tape Media

The following describes data handling with the DAT, DLT, or AIT optionally available for the server.

- Saving your valuable data

  When you save your valuable data or programs into the cartridge tape, you should save them into two cartridge tapes to make the primary and secondary tapes.

  This enables you to restore your data from one tape when the other makes a read error, as well as to protect your valuable data and programs from loss.

- Three-generation data management

  NEC recommends that you should employ three-generation data management for data storage.

  Three-generation data management uses three cartridge tapes: A, B, and C. You save data to tape A on the first day, tape B on the second day, tape C on the third day, tape A on the forth day, and so on. That is, you save data into cartridge tapes cyclically from tape A through C.

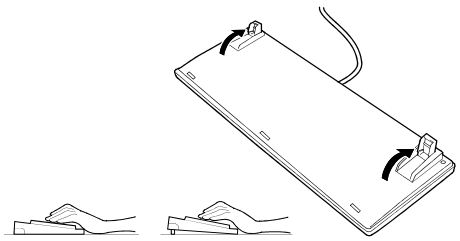
  This enables you, for example, to use tape B to restore the data when tape C makes a read error. Also when both tapes B and C make a read error, you can restore your valuable data by using the data stored in tape A.

Keyboard

The keyboard is a device to instruct you computer by entering alphanumeric characters or symbols.

IMPORTANT:

- Do not pour any liquid such as water or put anything into the keyboard. Doing so may cause a failure of the keyboard.
- The keyboard provided with the server is designed for adjustment of an angle. Adjust the keyboard angle at which the keyboard is easy to operate. The adjustment assists in reducing strain on your shoulders, arms, and fingers.



NOTE: The keyboard functions depend on the software. Refer to the manual that comes with the software for details.

Mouse

Like the keyboard, the mouse is a device to instruct your computer. Many OS's and application software require the mouse for operation.

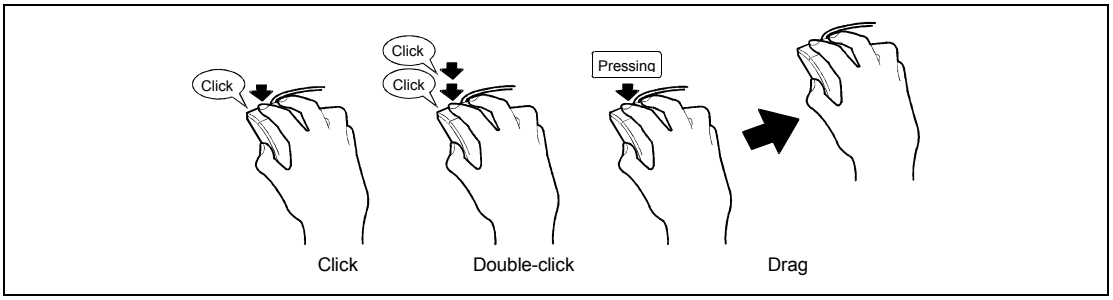
NOTE:

- Functions assigned to the mouse buttons vary depending on the software. For details, refer to the manual provided with the software.
- Use the mouse on a clean desk. Using the mouse on a dusty or dirty desk disturbs smooth movement or normal operation of the mouse. When your mouse movement seems dull, clean your mouse. (See Chapter 7.)

Mouse operation includes "Click," "Double-click," and "Drag."

Click:	Press the button only once and release it.
Double-click:	Press the button twice consecutively and release it.
Drag:	Press and hold the button and move the mouse.

Operation of the server involves combinations of these mouse operations and data entries with the keyboard.



Appendix C

IRQ

The factory-set interrupt requests is listed below. Find an appropriate one to install an optional device.

IRQ	Peripheral Device (Controller)	IRQ	Peripheral Device (Controller)
0	System timer	12	SM Bus
1	–	13	Numeric processor
2	–	14	Primary IDE
3	COM2 serial port	15	–
4	COM1 serial port	16	VGA, LAN1
5	PCI	17	LAN2, SATA
6	–	18	–
7	PCI	19	–
8	Real-time clock	20	USB
9	ACPI compliant system	21	USB
10	PCI	22	USB
11	Mother board resource	23	USB

(This page is intentionally left blank.)

Appendix D

Installing Windows Server 2008

This section explains how to install the Windows Server 2008.

NOTICE

Read the following notes or information before installing the Windows Server 2008.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD attached to your server supports the following optional boards;

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device" and "Installing Optional Mass Storage Driver" of "Parameter File Creator" in Chapter 6.

- Controllers supporting installation of OS with Express Setup
  - Internal RAID Controller (equivalent to N8103-116A)
  - N8103-116A RAID Controller (128MB, RAID0/1)
  - N8103-117A RAID Controller (128MB, RAID0/1/5/6)
  - N8103-118A RAID Controller (256MB, RAID0/1/5/6)
  - Onboard RAID Controller (LSI Embedded MegaRAID™)
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*
  - N8190-127 Fibre Channel Controller*
  - N8190-131 Fibre Channel Controller (2ch)*
  - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)

  * Option

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2008
  - OS installation media (No Service Pack)

Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

Updating System

If you modified the Windows system, execute "Update the system" in the Autorun Menu.

Installing on the Mirrored Volume

When re-installing the OS to a hard disk drive which has been upgraded to Dynamic Disk, only the simple dynamic volume is available for installation.

If you want to install the OS on a volume that is mirrored using [Disk Management], invalidate the mirroring and reset to the basic disk before the installation, and validate the mirroring again after the installation.

You can create, invalidate, or delete the mirror volume by using [Disk Management] in [Computer Management].

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.

Floppy Disk Drive

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive if necessary.

About the System Partition Size

The system partition size can be calculated from the following formula.

When the system is Windows Server 2008 64-bit (x64) Edition:

Required partition size =
size required to install OS + paging file size + dump file size + application size

Size required to install OS	= 11,600MB (Full Installation) or = 4,100MB (Server Core Installation)
Paging file size (recommended)	= Installed memory size x 1.5
Dump file size	= Installed memory size + 300MB
Application size	= Required size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

Example:

The partition size required for a system with an installed memory size of 512 MB and a full installation of the operating system:

11,600MB + (512MB x 1.5) + (512MB + 300MB) + application size
= 13,180MB + application size.

If the provided partition size is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the system partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

When the system is Windows Server 2008 32-bit (x86) Edition

Required partition size =
size required to install OS + paging file size + dump file size + application size

Size required to install OS	= 6,300MB (Full Installation) or = 2,200MB (Server Core Installation)
Paging file size (recommended)	= Installed memory size x 1.5
Dump file size	= Installed memory size + 300MB
Application size	= Required size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 300MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

Example:

The partition size required for a system with an installed memory size of 512 MB and a full installation of the operating system:

6,300MB + (512MB x 1.5) + 512MB + 300MB + application size
= 7,880MB + application size.

If the partition where the operating system is installed is smaller than that required to install the OS and paging file, expand the partition size or utilize a larger disk. If your system does not have a sufficient dump file size, divide the required file space into multiple disks by performing the steps below:

1. Set the partition size to a size sufficient to install the OS and paging file.
2. See "Setting for Solving Problems" to write the debug information of the dump file onto another disk.

If there is not enough disk space to write the debug information, add another disk for the dump file.

INSTALLING Windows Server 2008

Preparations for Installation

- NEC EXPRESSBUILDER DVD
- Microsoft Windows Server 2008 Standard (DVD-ROM) / Microsoft Windows Server 2008 Enterprise (DVD-ROM)
- User's Guide
- Getting Started
- Windows Server 2008 OEM-Disk for EXPRESSBUILDER

Creating "Windows Server 2008 OEM-Disk for EXPRESSBUILDER"

In case using Onboard RAID controller (LSI Embedded MegaRAID), befor installing create "Windows Server 2008 OEM-Disk for EXPRESSBUILDER".

It does not need, except for using Onboard RAID controller (LSI Embedded MegaRAID).

NOTE: If you have already "Windows Server 2008 OEM-Disk for EXPRESSBUILDER" for NEC Express5800 server which you are going to install Windows Server 2008, you do not need to create it again.

NOTE: What is "OEM-Disk"?

- In case of creating the disk for Windows Server 2008 64-bit(x64) Edition:
  It is called [Windows Server 2008 x64 OEM-Disk for EXPRESSBUILDER].
- In case of creating the disk for Windows Server 2008 32-bit (x86) Edition:
  It is called [Windows Server 2008 OEM-Disk for EXPRESSBUILDER].

You can create Windows Vista OEM-Disk for EXPRESSBUILDER with the following two procedures.

Create from the menu which appears when running NEC Express5800 server with NEC EXPRESSBUILDER.

If you have only NEC Express5800 server to create Windows Server 2008 OEM-Disk for EXPRESSBUILDER, use this procedure.

If Windows Server 2008 can be operated on NEC Express5800 server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 server.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl**, **Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD and NEC EXPRESSBUILDER starts.
5. Select [Create the OEM-Disk for Windows] from [Tools Menu] step.
6. Insert a floppy disk into the floppy disk drive.
7. Select [Create a Windows Server 2008 OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].

   NOTE: In case of creating the disk for Windows Server 2008 64-bit (x64) Edition, select [Create a Windows Server 2008 x64 OEM-Disk for EXPRESSBUILDER].
8. Windows Server 2008 OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Create from [Autorun Menu]

This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).

You can create Windows Server 2008 OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Start the Operating System.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.

   The Menu will appear.
4. Insert the floppy disk into the floppy disk drive.
5. Click [Create drive disk] and select [OEM-Disk for Windows Server 2008].

   NOTES:

   - In case of creating the disk for Windows Server 2008 64-bit (x64) Edition, select [OEM-Disk for Windows Server 2008 x64].
   - You can do the same operation with the menu appeared by the Right-click.
6. Windows Server 2008 OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Windows Server 2008 Clean Installation

This section explains how to perform a clean installation of Windows Server 2008.

> **IMPORTANT:** The installation procedure depends on your environment. Follow steps below appropriate to your environment.

<In case using Onboard RAID controller (LSI Embedded MegaRAID™)>

1. Turn on your system.

   > **IMPORTANT:** To install Windows Server 2008, you may need to update BIOS. To check if your system needs a BIOS update, go to: http://www.nec.com/express/.

2. Insert the Windows Server 2008 DVD-ROM into your DVD-ROM drive.

   > **NOTE:** When You use "Onboard RAID controller (LSI Embedded MegaRAID)", "Windows Server 2008 OEM-Disk for EXPRESSBUILDER" is necessary.

3. Restart the system.
   To restart the system, press **Ctrl** + **Alt** + **Del** or turn off the system once, and then turn it on again.

   > **IMPORTANT:** When prompted to [press any key to boot from CD or DVD], press **Enter** while the message is displayed. If the Windows installation screen (shown in step 4) does not appear, turn off the system, and then turn it on again.

   The DVD-ROM starts. A message "Windows is loading files …" appears.

4. Select a language and other options from the drop-down lists, and then click [Next].

Install Windows
Windows Server 2008
Language to install: English
Time and currency format: English (United States)
Keyboard or input method: US
Enter your language and other preferences and click "Next" to continue.
Copyright © 2007 Microsoft Corporation. All rights reserved.
Next

5. Click the [Install now] button.

The installation starts.

Install Windows
Windows Server 2008
Install now
What to know before installing Windows
Repair your computer
Copyright © 2007 Microsoft Corporation. All rights reserved.

6. The following message is displayed.

> Load Driver
>
> A required CD/DVD drive device driver is missing. If you have a driver for floppy disk, CD, DVD, or USB flash drive, please insert it now.
>
> Note; If the Windows installation media is in the CD/DVD drive, you can safely remove it for this step.
>
> [Browse] [OK] [Cancel]

<Windows Server 2008 64-bit (x64) Edition:>

Insert the Windows Server 2008 x64 OEM-Disk for EXPRESSBUILDER into the floppy disk drive, and press [Browse].

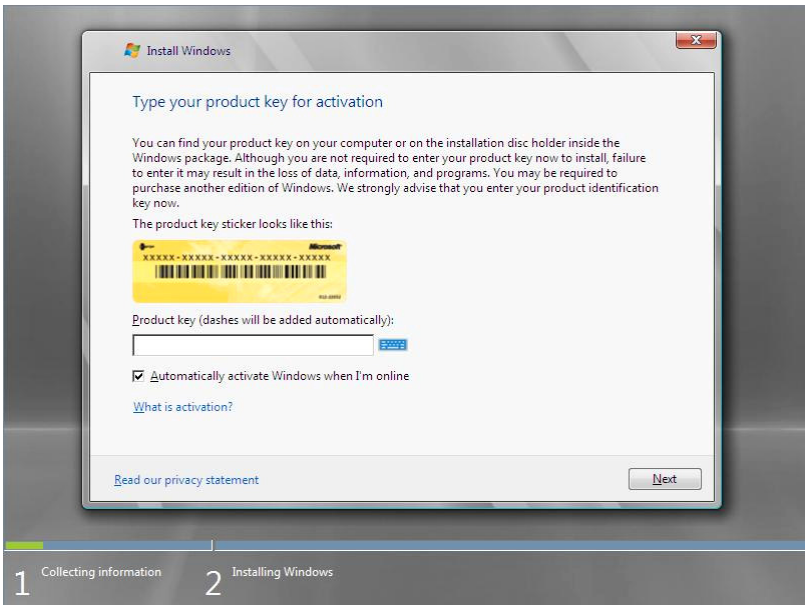
<Windows Server 2008 32-bit (x86) Edition:>

Insert the Windows Server 2008 OEM-Disk for EXPRESSBUILDER into the floppy disk drive, and press [Browse].

7. When [Browse for Folder] window is displayed, select <floppy disk drive>\megasr1, and press [OK].

8. Select [LSI Embedded MegaRAID (<floppy disk drive>\megasr1\megasr.inf)] and press [Next].

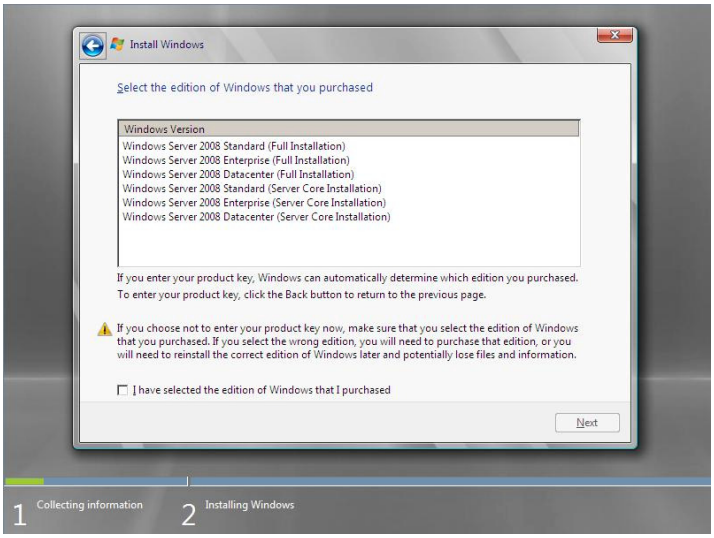
9. Enter your product key, and then click [Next].


Install Windows
Type your product key for activation
You can find your product key on your computer or on the installation disc holder inside the Windows package. Although you are not required to enter your product key now to install, failure to enter it may result in the loss of data, information, and programs. You may be required to purchase another edition of Windows. We strongly advise that you enter your product identification key now.
The product key sticker looks like this:
XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
Product key (dashes will be added automatically):
Automatically activate Windows when I'm online
What is activation?
Read our privacy statement
Next
1 Collecting information
2 Installing Windows

10. Select the edition of the Windows operating system that you purchased.

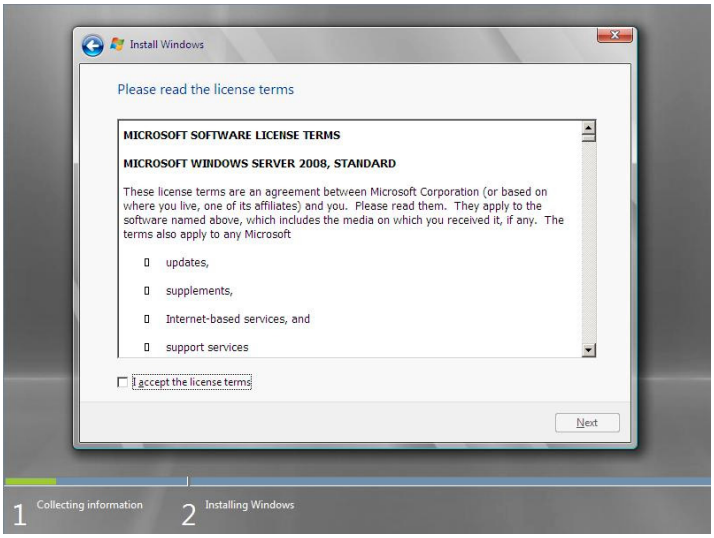
Select [I have selected the edition of Windows that I purchased], and then click [Next].

You will see only possible editions that have been determined by Windows based on the key you entered in step 9.


Install Windows
Select the edition of Windows that you purchased
Windows Version
Windows Server 2008 Standard (Full Installation)
Windows Server 2008 Enterprise (Full Installation)
Windows Server 2008 Datacenter (Full Installation)
Windows Server 2008 Standard (Server Core Installation)
Windows Server 2008 Enterprise (Server Core Installation)
Windows Server 2008 Datacenter (Server Core Installation)
If you enter your product key, Windows can automatically determine which edition you purchased.
To enter your product key, click the Back button to return to the previous page.
If you choose not to enter your product key now, make sure that you select the edition of Windows that you purchased. If you select the wrong edition, you will need to purchase that edition, or you will need to reinstall the correct edition of Windows later and potentially lose files and information.
I have selected the edition of Windows that I purchased
Next
1 Collecting information
2 Installing Windows

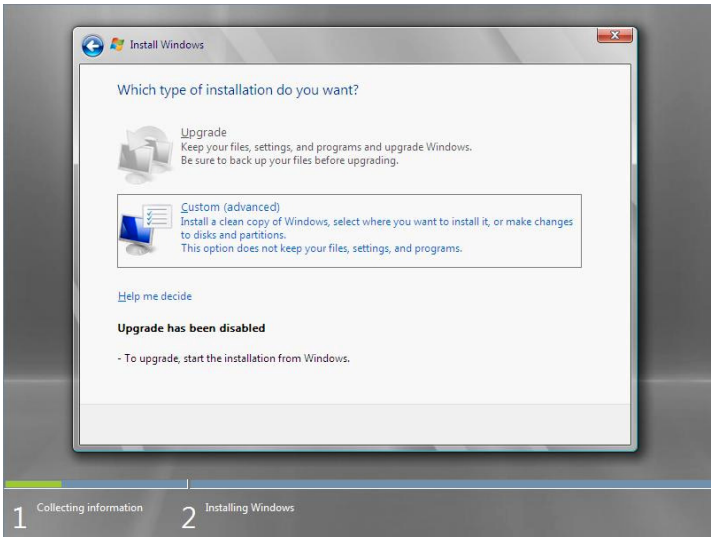
NOTE: The Windows versions listed on the screen vary depending on the Windows Server 2008 DVD-ROM you are using.

11. Read the license terms carefully. If you agree, select [I accept the license terms], and then click [Next].


Install Windows
Please read the license terms
MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT WINDOWS SERVER 2008, STANDARD
These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft
updates,
supplements,
Internet-based services, and
support services
I accept the license terms
Next
1 Collecting information
2 Installing Windows

12. Select the type of installation you want.

[Custom (advanced)] is selected below.


Install Windows
Which type of installation do you want?
Upgrade
Keep your files, settings, and programs and upgrade Windows.
Be sure to back up your files before upgrading.
Custom (advanced)
Install a clean copy of Windows, select where you want to install it, or make changes to disks and partitions.
This option does not keep your files, settings, and programs.
Help me decide
Upgrade has been disabled
- To upgrade, start the installation from Windows.
1 Collecting information
2 Installing Windows

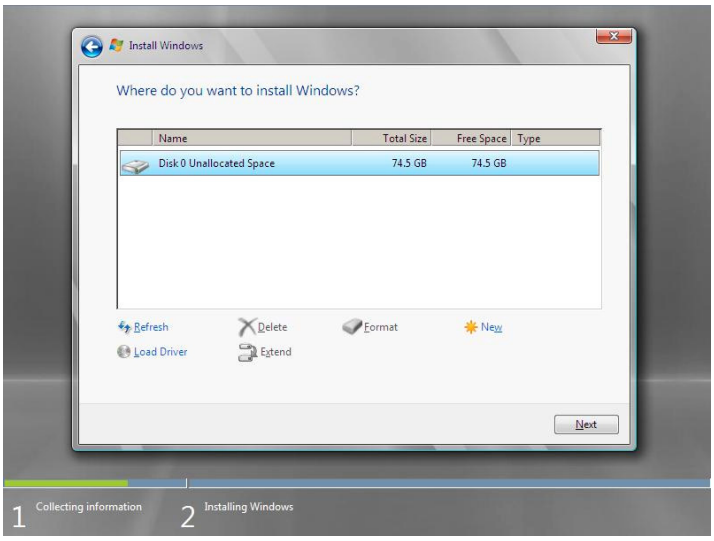
13. Select the disk where a partition will be created, and then click [Drive Option].

IMPORTANT: If the partition has already been created, go to step 16.

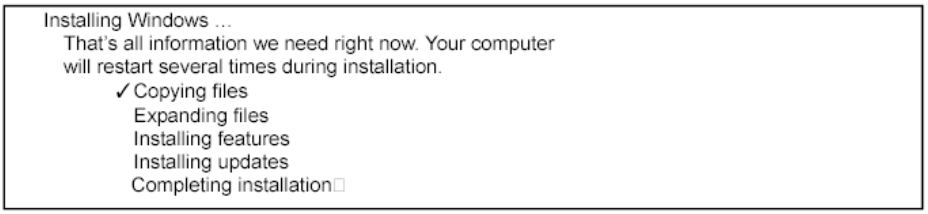
14. Click [New], enter a partition size, and then click [Apply].

15. Select the partition created in step 12, and then click [Format].

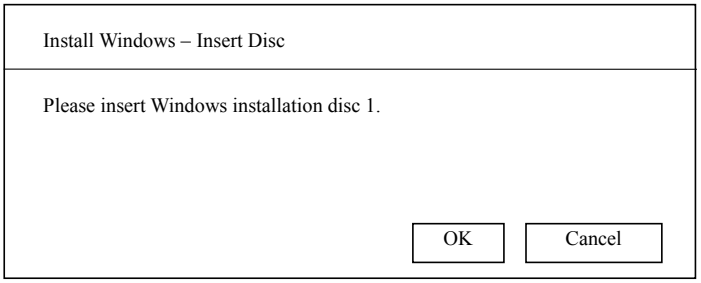
16. Select the partition created, and then click [Next].



When the following message appears, the installation starts automatically.


Installing Windows ...
That's all information we need right now. Your computer will restart several times during installation.
✓ Copying files
Expanding files
Installing features
Installing updates
Completing installation

NOTE: If the disk drive contains NEC EXPRESSBUILDER DVD, you will be prompted to replace a media with that for OS installation. Insert the install media according to the on-screen message.

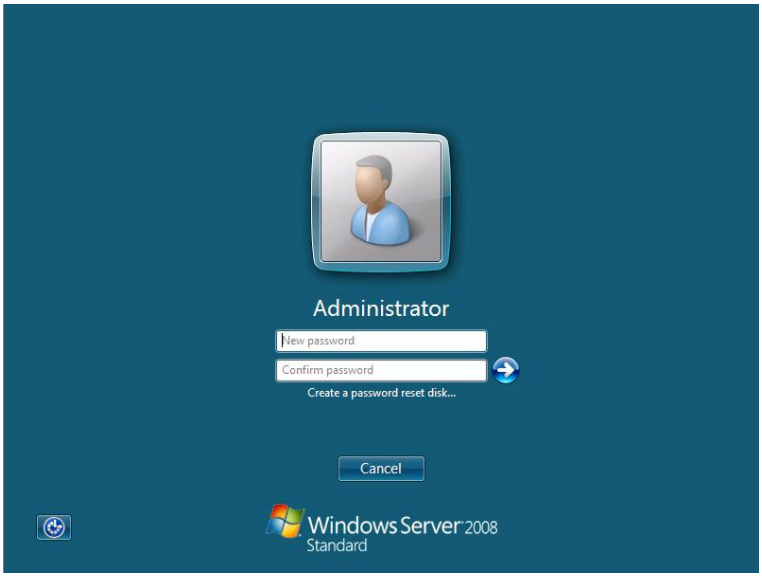


17. Log on to the system. The steps vary depending on the edition you selected in step 7.

If you have selected a full installation

1. After a full installation of Windows Server 2008 is completed, the following dialog box will prompt you to set or change the password before you log on. Click [OK].

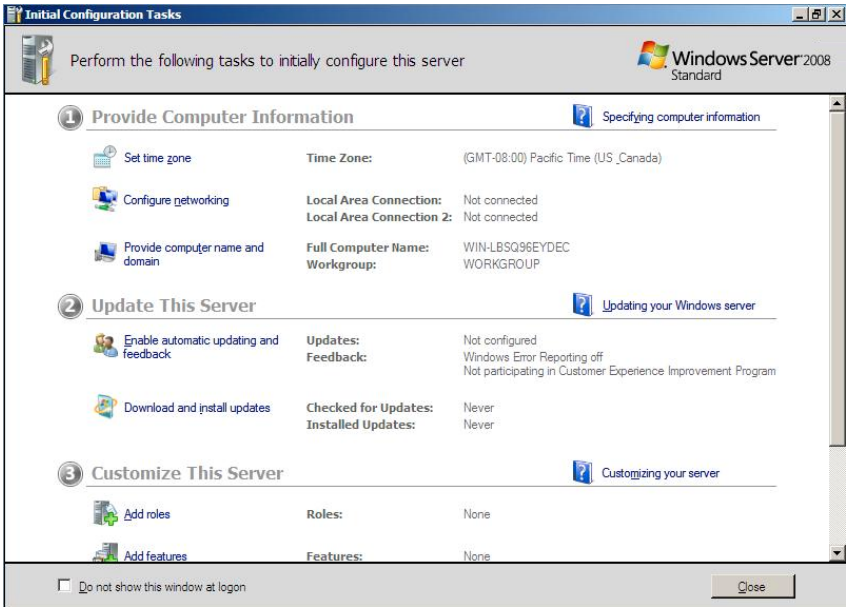
2. Change the password, and then click the button.



NOTE: The Windows Server 2008 password must combine uppercase letters, lowercase letters, and numbers.

3. When the following message appears, click [OK] to log on.

4. On the [Initial Configuration Tasks] window, enter user information.

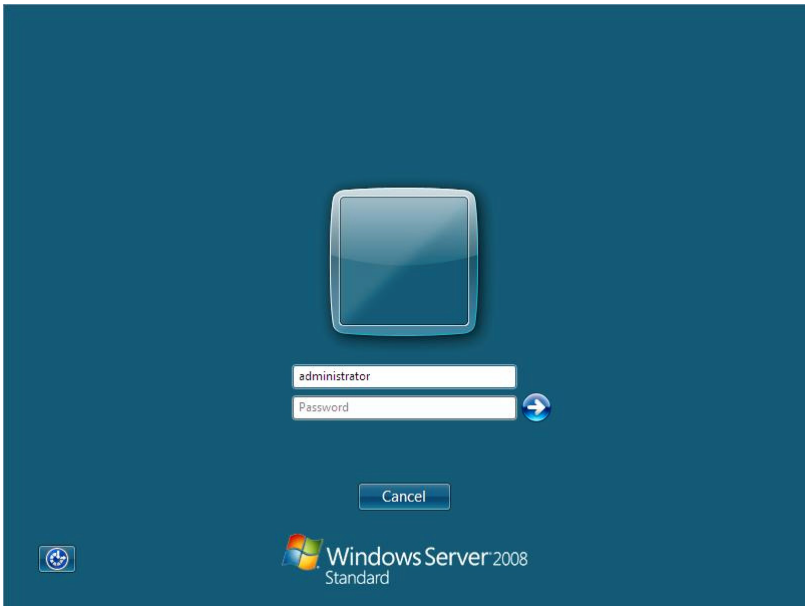


If you have selected a Server Core installation

1. After a Server Core installation of Windows Server 2008 is completed, press **Ctrl** + **Alt** + **Del**.

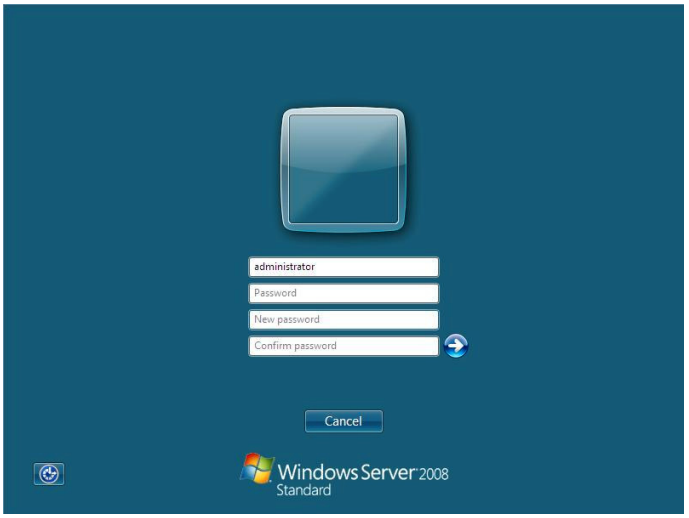
2. Select [Other User].

3. Log on to the system as an administrator.
You need not enter your password in this dialog box. Click the button.



4. Before you log on, you will be prompted to change the password. Click [OK].

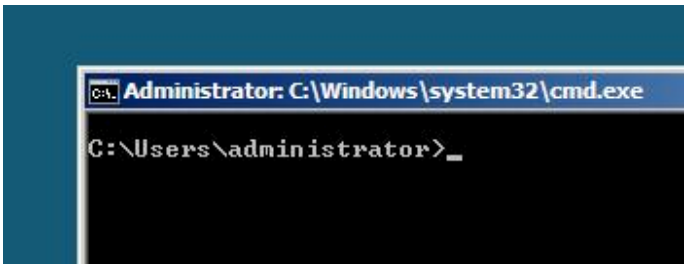
5. Change the password, and then click the button.



NOTE: The Windows Server 2008 password must combine uppercase letters, lowercase letters, and numbers.

6. When the following message appears, click [OK].

7. At the command prompt, enter user information.



NOTE: For more detailed procedure, see the "Microsoft Windows Server 2008 Step-By-Step Guide".

After installations is completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" and "Updating the System" of this chapter.

<In case not using Onboard RAID controller (LSI Embedded MegaRAID™)>

1. Turn on your system.

   IMPORTANT: To install Windows Server 2008, you may need to update BIOS. To check if your system needs a BIOS update, go to: http://www.nec.com/express/.

2. Insert the Windows Server 2008 DVD-ROM into your DVD-ROM drive.

3. Restart the system.
   To restart the system, press **Ctrl** + **Alt** + **Del** or turn off the system once, and then turn it on again.

   IMPORTANT: When prompted to [press any key to boot from CD or DVD], press **Enter** while the message is displayed. If the Windows installation screen (shown in step 4) does not appear, turn off the system, and then turn it on again.

   The DVD-ROM starts. A message "Windows is loading files …" appears.

4. Select a language and other options from the drop-down lists, and then click [Next].

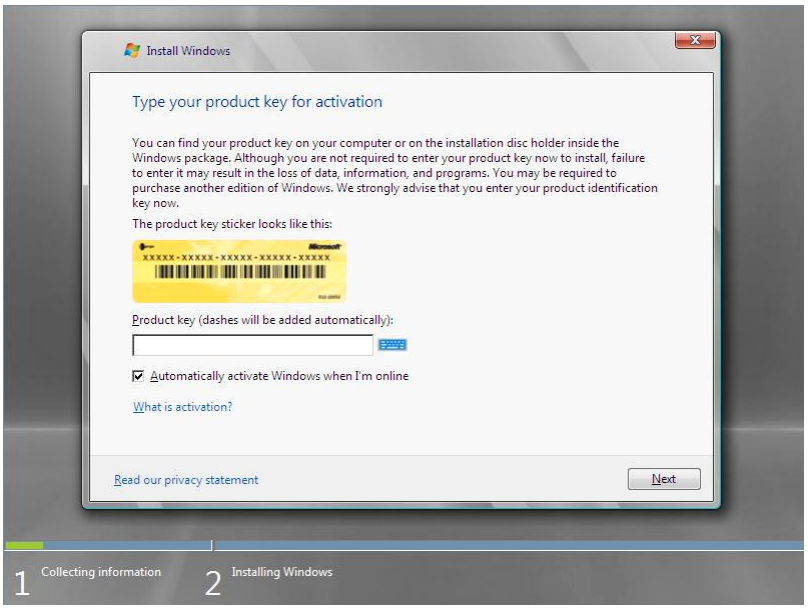
Install Windows
Windows Server 2008
Language to install: English
Time and currency format: English (United States)
Keyboard or input method: US
Enter your language and other preferences and click "Next" to continue.
Copyright © 2007 Microsoft Corporation. All rights reserved.
Next

5. Click the [Install now] button.

The installation starts.

Install Windows
Windows Server 2008
Install now
What to know before installing Windows
Repair your computer
Copyright © 2007 Microsoft Corporation. All rights reserved.

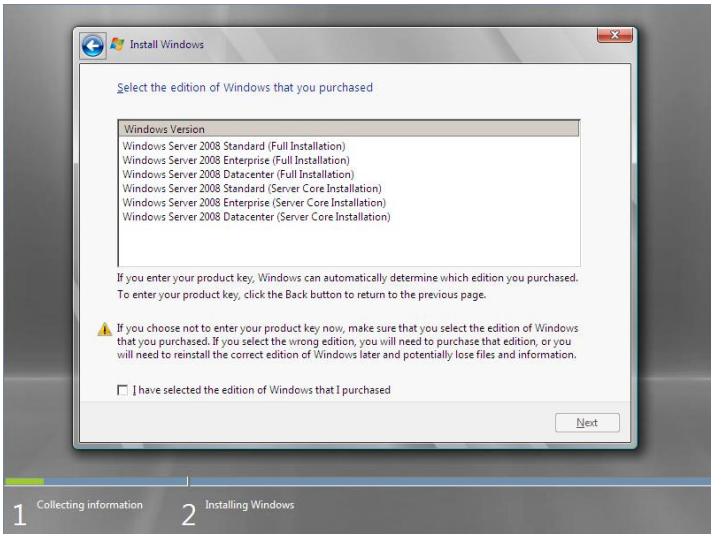
6. Enter your product key, and then click [Next].


Install Windows
Type your product key for activation
You can find your product key on your computer or on the installation disc holder inside the Windows package. Although you are not required to enter your product key now to install, failure to enter it may result in the loss of data, information, and programs. You may be required to purchase another edition of Windows. We strongly advise that you enter your product identification key now.
The product key sticker looks like this:
XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
Product key (dashes will be added automatically):
Automatically activate Windows when I'm online
What is activation?
Read our privacy statement
Next
1 Collecting information
2 Installing Windows

7. Select the edition of the Windows operating system that you purchased.

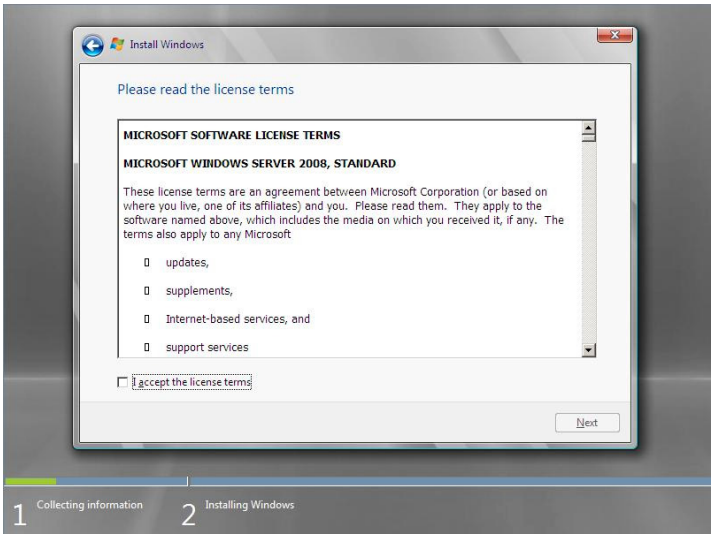
Select [I have selected the edition of Windows that I purchased], and then click [Next].

You will see only possible editions that have been determined by Windows based on the key you entered in step 6.


Install Windows
Select the edition of Windows that you purchased
Windows Version
Windows Server 2008 Standard (Full Installation)
Windows Server 2008 Enterprise (Full Installation)
Windows Server 2008 Datacenter (Full Installation)
Windows Server 2008 Standard (Server Core Installation)
Windows Server 2008 Enterprise (Server Core Installation)
Windows Server 2008 Datacenter (Server Core Installation)
If you enter your product key, Windows can automatically determine which edition you purchased.
To enter your product key, click the Back button to return to the previous page.
If you choose not to enter your product key now, make sure that you select the edition of Windows that you purchased. If you select the wrong edition, you will need to purchase that edition, or you will need to reinstall the correct edition of Windows later and potentially lose files and information.
I have selected the edition of Windows that I purchased
Next
1 Collecting information
2 Installing Windows

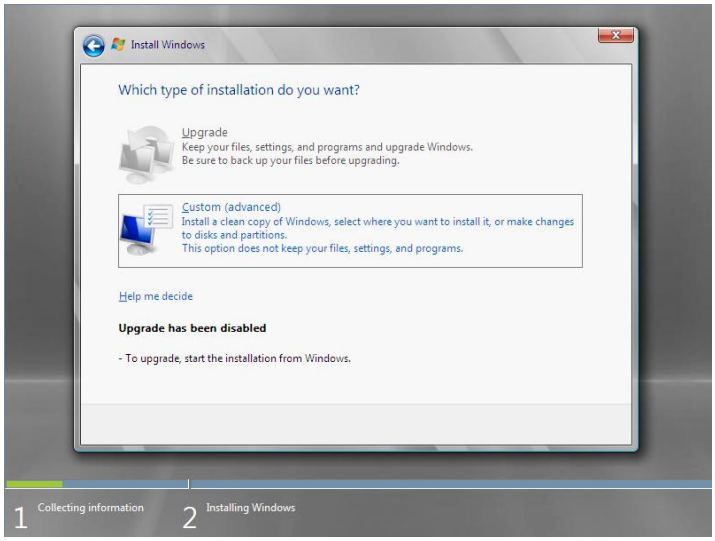
NOTE: The Windows versions listed on the screen vary depending on the Windows Server 2008 DVD-ROM you are using.

8. Read the license terms carefully. If you agree, select [I accept the license terms], and then click [Next].


Install Windows
Please read the license terms
MICROSOFT SOFTWARE LICENSE TERMS
MICROSOFT WINDOWS SERVER 2008, STANDARD
These license terms are an agreement between Microsoft Corporation (or based on where you live, one of its affiliates) and you. Please read them. They apply to the software named above, which includes the media on which you received it, if any. The terms also apply to any Microsoft
updates,
supplements,
Internet-based services, and
support services
I accept the license terms
Next
1 Collecting information
2 Installing Windows

9. Select the type of installation you want.

[Custom (advanced)] is selected below.


Install Windows
Which type of installation do you want?
Upgrade
Keep your files, settings, and programs and upgrade Windows.
Be sure to back up your files before upgrading.
Custom (advanced)
Install a clean copy of Windows, select where you want to install it, or make changes to disks and partitions.
This option does not keep your files, settings, and programs.
Help me decide
Upgrade has been disabled
- To upgrade, start the installation from Windows.
1 Collecting information
2 Installing Windows

10. You will be asked, "Where do you want to install Windows?".

- If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is used:

  Select [Load Driver], and then click [Browse].

  The folder reference dialog box appears. Select a path to the folder in the NEC EXPRESSBUILDER DVD, and then click [OK].

  – Windows Server 2008 64-bit (x64) Edition:

    <drive letter>:\009\win\winnt\oemfd\ws2008x64\fd1\megasas

  – Windows Server 2008 32-bit (x86) Edition:

    <drive letter>: \009\win\winnt\oemfd\ws2008\fd1\megasas

  After you select the path, a list of drivers is displayed. Select the following driver, and then click [OK]. Go to Step 11.

    [LSI Logic MegaRAID SAS 8708EM2 RAID Controller]

- If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is not used:

  Go to Step 12.

11. Remove the EXPRESSBUILDER and set Backup DVD-ROM or Windows Server 2008 DVD-ROM.

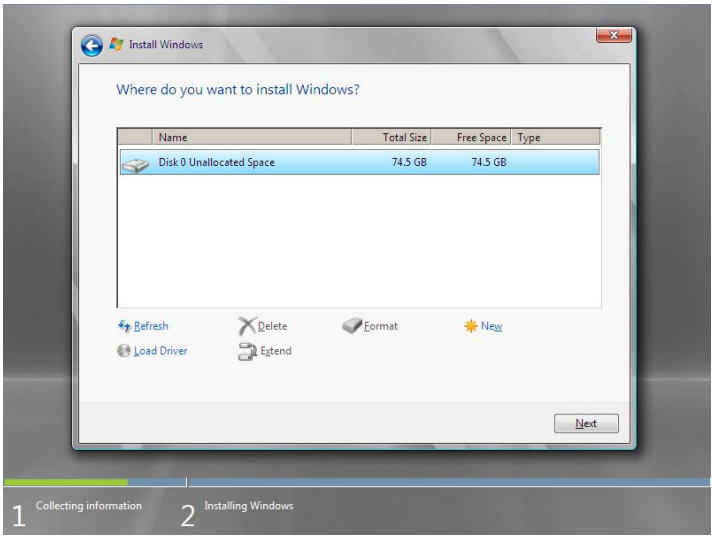
12. Select the disk where a partition will be created, and then click [Drive Option].

IMPORTANT: If the partition has already been created, go to step 14.

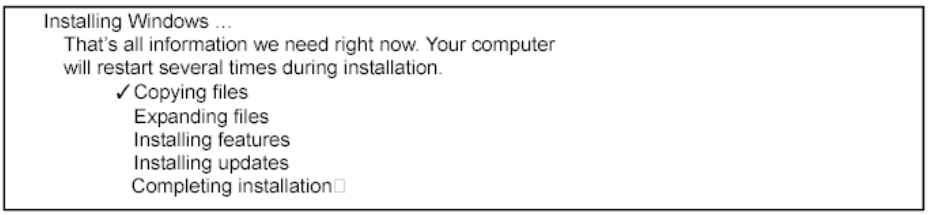
13. Click [New], enter a partition size, and then click [Apply].

14. Select the partition created in step 12, and then click [Format].

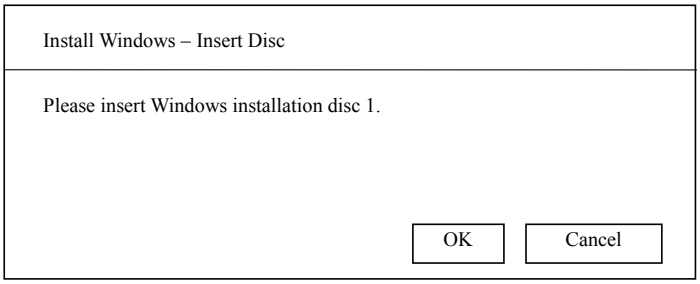
15. Select the partition created, and then click [Next].



When the following message appears, the installation starts automatically.


Installing Windows ...
That's all information we need right now. Your computer will restart several times during installation.
✓Copying files
Expanding files
Installing features
Installing updates
Completing installation

NOTE: If the disk drive contains NEC EXPRESSBUILDER DVD, you will be prompted to replace a media with that for OS installation. Insert the install media according to the on-screen message.



16. Log on to the system. The steps vary depending on the edition you selected in step 7.

If you have selected a full installation

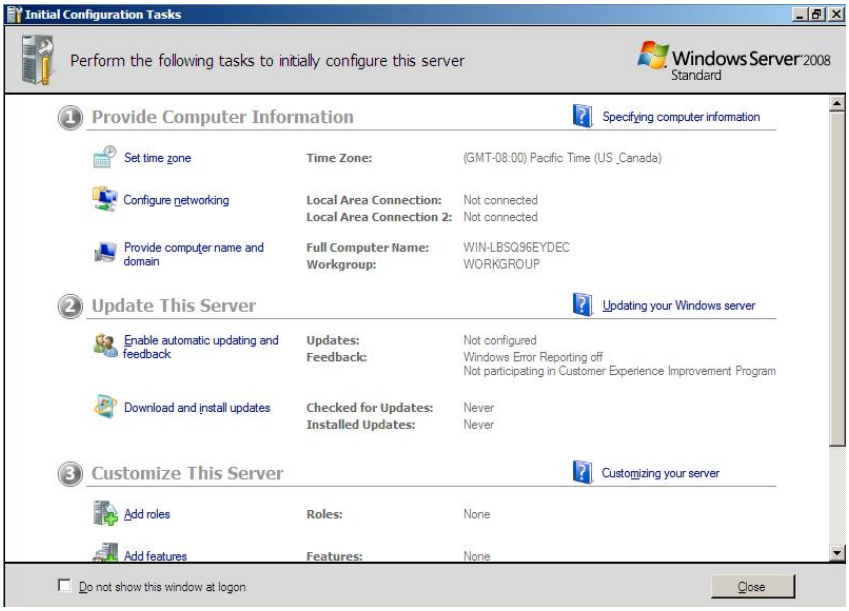
1. After a full installation of Windows Server 2008 is completed, the following dialog box will prompt you to set or change the password before you log on. Click [OK].

2. Change the password, and then click the button.

NOTE: The Windows Server 2008 password must combine uppercase letters, lowercase letters, and numbers.

3. When the following message appears, click [OK] to log on.

4. On the [Initial Configuration Tasks] window, enter user information.

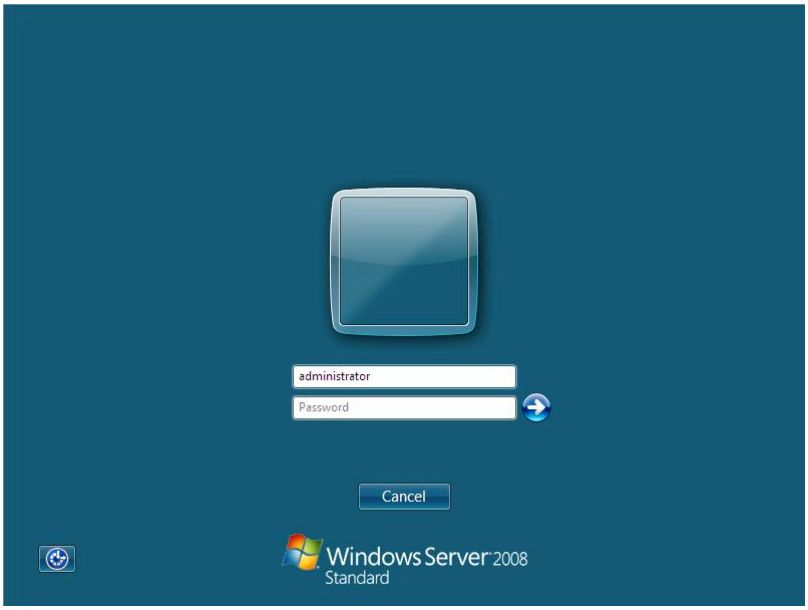


If you have selected a Server Core installation

1. After a Server Core installation of Windows Server 2008 is completed, press **Ctrl** + **Alt** + **Del**.

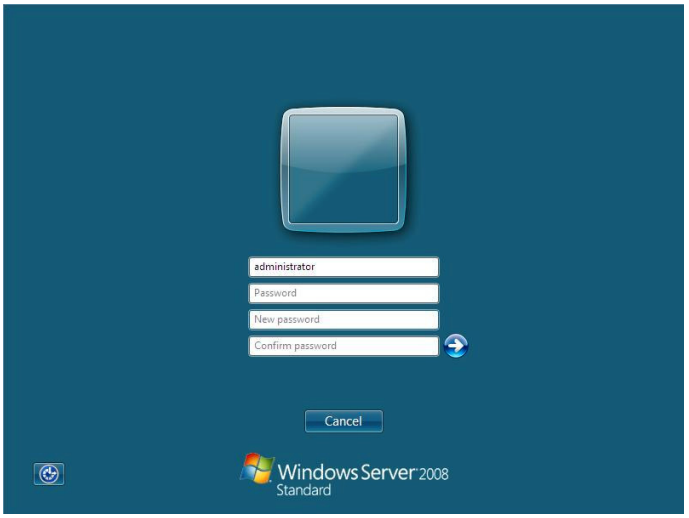
2. Select [Other User].

3. Log on to the system as an administrator.
You need not enter your password in this dialog box. Click the button.



4. Before you log on, you will be prompted to change the password. Click [OK].

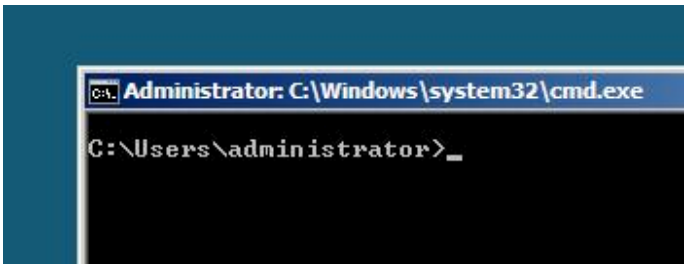
5. Change the password, and then click the button.



NOTE: The Windows Server 2008 password must combine uppercase letters, lowercase letters, and numbers.

6. When the following message appears, click [OK].

7. At the command prompt, enter user information.



NOTE: For more detailed procedure, see the "Microsoft Windows Server 2008 Step-By-Step Guide".

After installations is completed, be sure to execute the tasks described in "Setup of Device Driver (Normally Install in Server)" and "Updating the System" of this chapter.

Updating the System

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security.

The system update is recommended.

Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

1. Log on to the system using an administrator account.
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.
3. Hereinafter, the setup process is depending on the content selected at [Installing Windows Server 2008], follow each of the instructions.
   - If you have selected a full installation

     If the menu is displayed, click [Setup Windows] and click [Update the system].

     NOTE: Right-clicking on the Menu produces the same outcome.

   - If you have selected a Server Core installation

     1) Execute the following command line from command prompt to specify the optical disk drive (e.g. D drive).

        cd /d d:\009\win\winnt\bin\oschk\

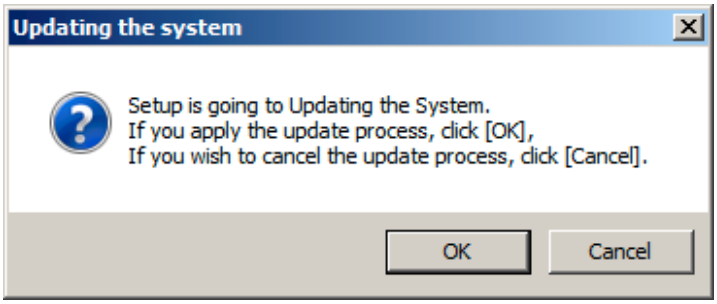
        ```
        C:\Users\administrator>cd /d D:\009\win\winnt\bin\oschk
        ```

     2) Type following command line and press **Enter**.

        oschk.bat

        ```
        D:\009\win\winnt\bin\oschk>oschk.bat
        ```

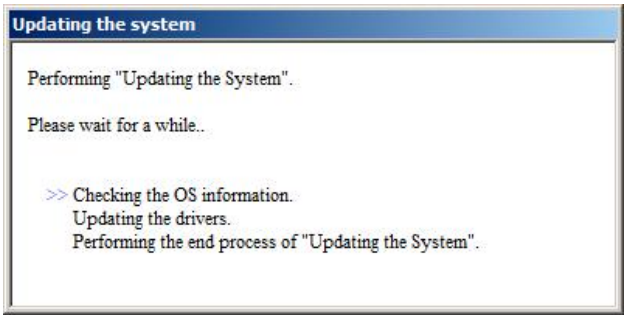
4. The following box appears.


Updating the system
Setup is going to Updating the System.
If you apply the update process, click [OK],
If you wish to cancel the update process, click [Cancel].
OK
Cancel

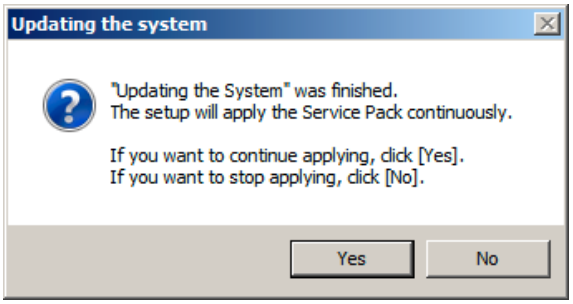
5. Read the message, and then click [OK].

The update starts.

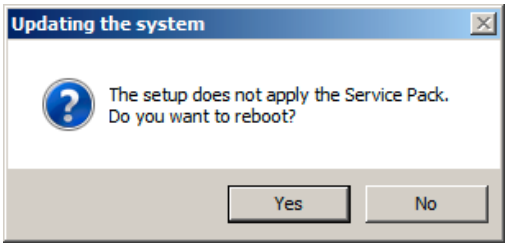
NOTE: The following box appears during the update if you have deployed a full installation of Windows Server 2008. Wait until the update completes.


Updating the system
Performing "Updating the System".
Please wait for a while..
>> Checking the OS information.
Updating the drivers.
Performing the end process of "Updating the System".

6. When the following message appears, click [No].


Updating the system
"Updating the System" was finished.
The setup will apply the Service Pack continuously.
If you want to continue applying, click [Yes].
If you want to stop applying, click [No].
Yes
No

7. When the following message appears, click [Yes] to restart the system.



The system has been updated.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

LAN Driver and PROSet

The LAN driver and PROSet have been installed automatically while your system was being updated in the previous section.

> **NOTE:** To change the LAN driver and PROSet settings, log on to the system from a local console using an administrator account. Remotely changing the settings by using the operating system's remote desktop feature is not supported.

Using N8104-125 Adapter after System Update

To use the N8104-125 Adapter after updating your system, you must first uninstall the LAN driver and PROSet, and then update your system with the N8104-125 Adapter connected.

For a server running a full installation

1. Remove a team of network adapters.

   > **NOTE:** Before you remove, note down the current settings (e.g. IP addresses) of the standard and optional adapters teamed for network redundancy.
   >
   > Configure the settings after reinstalling the LAN driver and PROSet.
   >
   > To remove the team, see "Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)".

2. In [Control Panel], click [Uninstall Program].
3. Double-click [Intel(R) Network Connections 13.2.8.0].

   [Intel(R) Network Connections (Remove Options)] appears.
4. In [Remove Options], click [Remove].

   [Intel(R) Network Connections - Remove Software] appears.
5. Select [Yes].

   The uninstallation starts automatically.

6. When [InstallShield Wizard Completed] appears. Click [Finish].

   Restart the system.

For a server running a Server Core installation

1. Note down the current settings (e.g. IP addresses) of the standard and optional adapters teamed for network redundancy before uninstalling LAN driver.

   Configure the settings after reinstalling the LAN driver.

2. At a command prompt, run "dxsetup.exe" in your removable medium containing the Driver Set.

   – Windows Server 2008 64-bit (x64) Editions:

     <drive latter>:\009\win\winnt\ws2008x64\ma21\apps\prosetdx\vistax64\dxsetup.exe

   – Windows Server 2008 32-bit (x86) Editions:

     <drive latter>:\009\win\winnt\ws2008\ma21\apps\prosetdx\vista32\dxsetup.exe

3. In [Intel(R) Network Connections - InstallShield Wizard], click [Next].

4. Select [Remove], and click [Next].

5. Click [Remove].

   Uninstallation starts automatically.

6. When [InstallShield Wizard Completed] appears, click [Finish].

   Restart the system.

Network Driver

Specify the details of network driver.

Two standard network drivers that are mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

> **NOTE:** We recommend you to add [Network Monitor] at [Adding Services].
>
> [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

Re-install the Network Driver

The network driver will be installed automatically.

Optional Network Board Driver (N8104-112/119/120/121/122/125)

The following optional network boards are available for the N8104-112/119/120/121/122/125.

To use the N8104-125 Adapter, see" Using N8104-125 Adapter after System Update" in the previous page.

The drivers for other network boards are automatically installed by Windows Plug-and-Play. You do not need to install them manually.

Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the throughput by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

IMPORTANT:

- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches,they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.

Setup Teaming

IMPORTANT:

- Teaming is not supported with Windows Server Core.
- AFT/ALB setting must be done after System Update completed.
- N8104-120/121/122/125 does not support SFT.
- Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.

   Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].

IMPORTANT: Do not include the member adapter over than two.

6. Select a team type ([Adapter Fault Tolerance]/[Adaptive Load Balancing]).

   Click [Next].

7. Click [Finish].

8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team. Click [Settings] tab and click [Modify Team] button.

9. Refer to the following procedure to set the team member adapter priority status.

   – Set Primary

     Point the adapter and click [Set Primary] button.

   – Set Secondary

     Point the adapter and click [Set Secondary] button.

   NOTE: Adapter priority config can be confirmed by the following procedure:

   1. Click [TEAM: "Team name"] from [Device manager]→[Network adapters].
   2. Click [Settings] and confirm Adapters in team list.

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.

    Confirm the result in [Test results].

    Even if the system is normal, the following mismatch message will appear sometimes. Recheck the switching hub (L2) port and if there is no problem with the setting, ignore the messages.

    – The switch is configured with aggregatedd ports, but theteam type does not support port aggregation. The switch is configured with VLAN tagging, but the team has no VLANs.

    – Change the team type to SLA, reconfigure the switch for link aggregation, or disable VLAN tagging on the switch.

11. Reboot the system.

Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter in not existing in [Network adapters] tree and reboot the system.

Setting WOL

Refer to the following procedure to enable WOL.

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Wake On Directed Packet"	ON	OFF
"Wake On Magic Packet"	ON	OFF
"Wake on Magic Packet from power off state"	OFF	ON

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will maintained until manually resetting are executed.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network port are not available of WOL.

4. Click [OK].
5. Reboot the system.

IMPORTANT:

- WOL (Wake On Lan) is available only in system Shutdown mode.
- WOL (Wake On Lan) is not available in system Hibernate and Sleep mode.

Graphics Accelerator Driver

If you use standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.
Standard graphics accelerator drivers will be installed automatically.

> **NOTE:** <Windows Server 2008>
>
> The graphics accelerator driver is supported only on a server running a full installation. Use VGA on a server running a Server Core installation.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "Install.bat" in the following directory.

   – Windows Server 2008 64-bit (x64) Edition:

     \009\win\winnt\ws2008x64\video

   – Windows Server 2008 32-bit (x86) Edition:

     \009\win\winnt\ws2008\video

4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.

5. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Installing SCSI Controller Driver (N8103-75/95/107)

If you use the SCSI Controller N8103-75/95/107, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing RAID Controller Driver (N8103-115)

The installation procedure depends on your environment.

Follow steps below appropriate to your environment.

● If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is used:

You do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

● If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is not used:

Please install the driver by the following procedures.

1. Start [Device Manager] from [Start] menu → [Administrative Tools]→ [Computer Management].
2. Double-click the "LSI Logic MegaRAID SAS 8880EM2 RAID Controller" which Device Manager lists as "Storage controllers".
3. Click [Update Driver].
4. When the "Update Driver Software- Logic MegaRAID SAS 8880EM2 RAID Controller Wizard" appears, select "Browse my computer for driver software".
5. Select "Let me pick from a list of device drivers on my computer".
6. Click [Have Disk..].
7. Insert "NEC EXPRESSBUILDER DVD" into the optical disk drive.

   Enter a path to the folder in the NEC EXPRESSBUILDER DVD into "Copy manufacturer's files from:" and click [OK].

   – Windows Server 2008 64-bit (x64) Edition:

     <drive letter>:\009\win\winnt\oemfd\ws2008x64\fd1\megasas

   – Windows Server 2008 32-bit (x86) Edition:

     <drive letter>: \009\win\winnt\oemfd\ws2008\fd1\megasas
8. Specify the following driver and click [Next].

   – [LSI Logic MegaRAID SAS 8880EM2 RAID Controller]
9. Click [Close].

The installation of the driver is completed.

Restart the system.

Installing Fibre Channel Controller Driver (N8190-127/131)

If you use the Fibre Channel Controller N8190-127/131, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

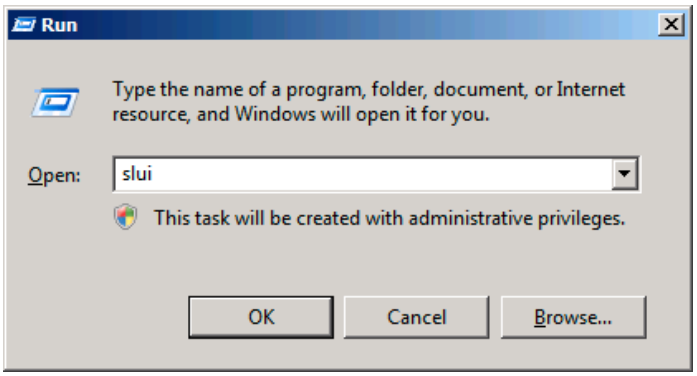
About Windows Activation

Windows Server 2008 must be activated before you can use Windows Server 2008.

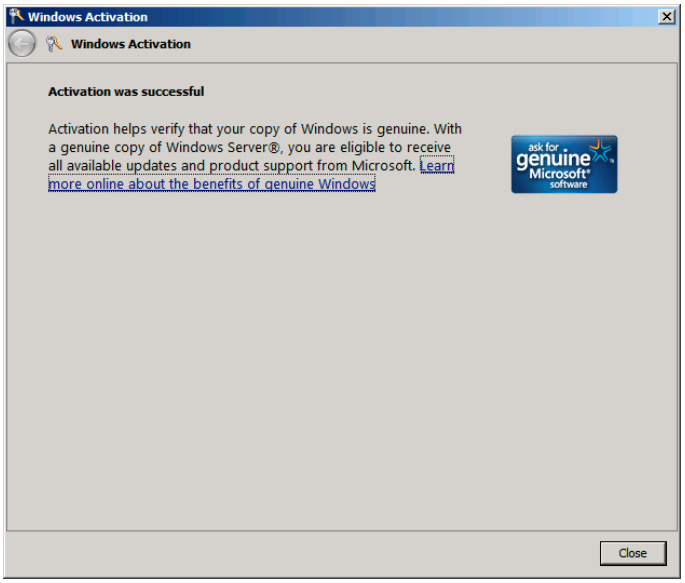
Windows activation process is as follows.

For a server running a full installation

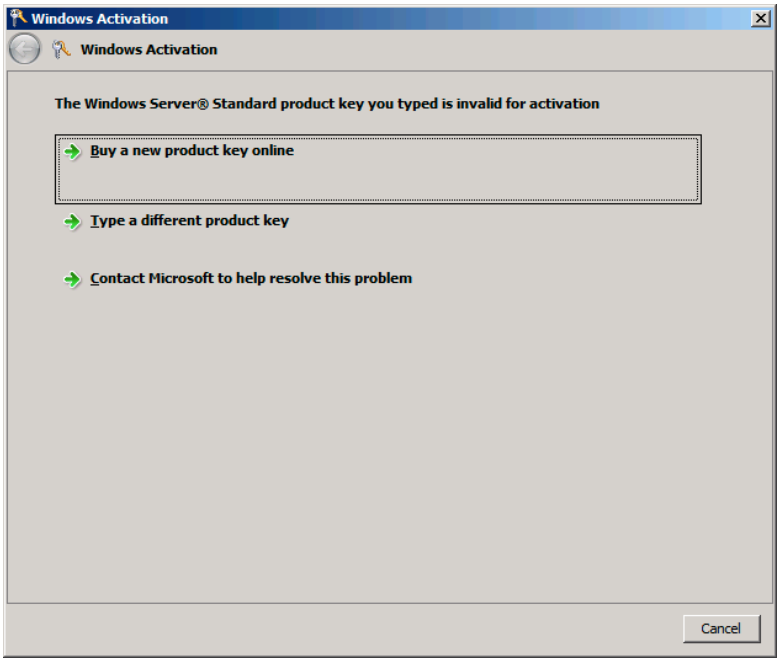
1. Go to the Start menu, and in the Run dialog box, type **slui**, and press **Enter**.


Run
Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.
Open:
slui
This task will be created with administrative privileges.
OK
Cancel
Browse...

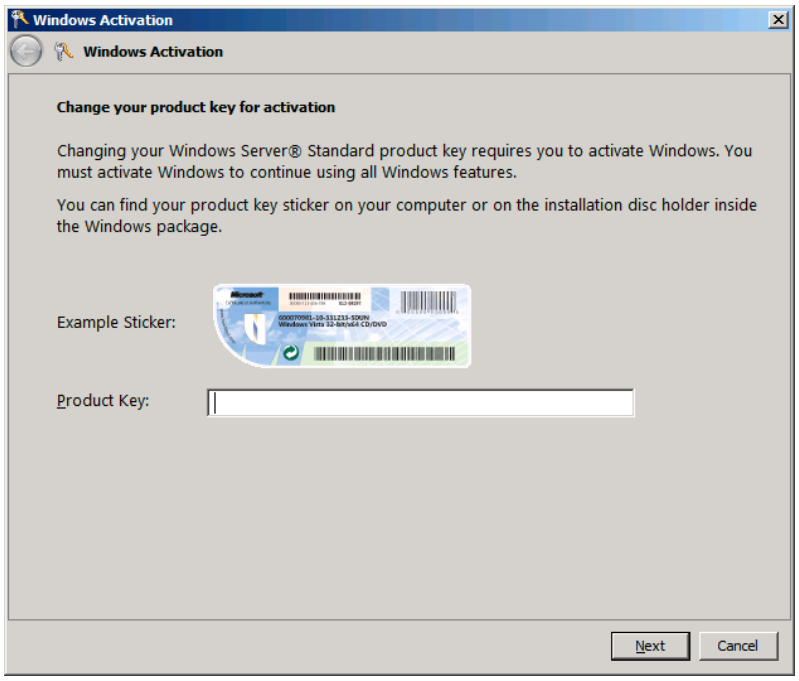
IMPORTANT: If the following message appears, Windows has already been activated on your system. Click [Close] to exit.


Windows Activation
Windows Activation
Activation was successful
Activation helps verify that your copy of Windows is genuine. With a genuine copy of Windows Server®, you are eligible to receive all available updates and product support from Microsoft. Learn more online about the benefits of genuine Windows
ask for genuine Microsoft software
Close

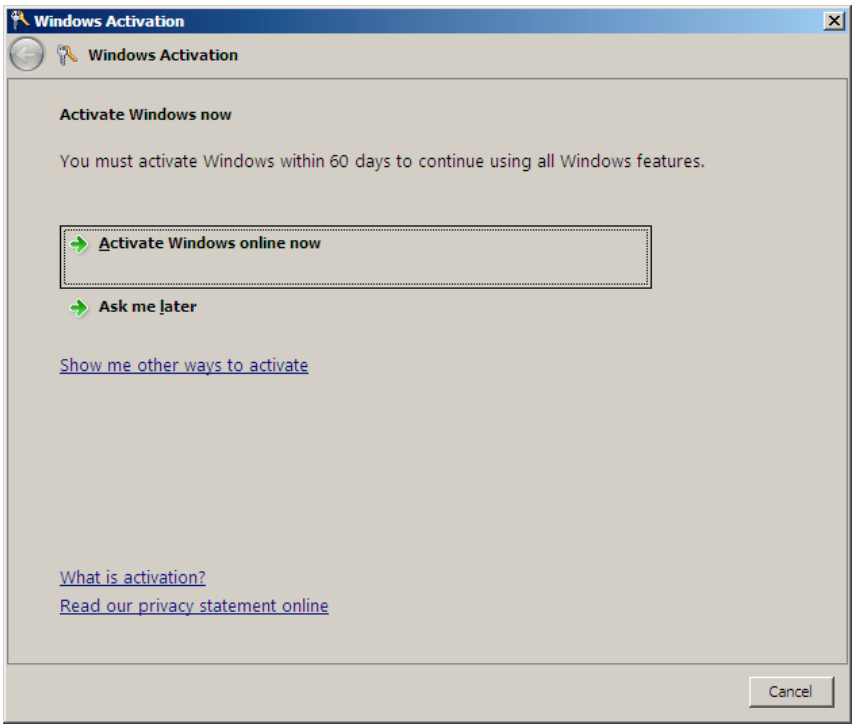
2. In the following screen, click [Type a different product key].


Windows Activation
Windows Activation
The Windows Server® Standard product key you typed is invalid for activation
Buy a new product key online
Type a different product key
Contact Microsoft to help resolve this problem
Cancel

3. Type the product key shown on your COA label, and click [Next].


Windows Activation
Windows Activation
Change your product key for activation
Changing your Windows Server® Standard product key requires you to activate Windows. You must activate Windows to continue using all Windows features.
You can find your product key sticker on your computer or on the installation disc holder inside the Windows package.
Example Sticker:
Product Key:
Next
Cancel

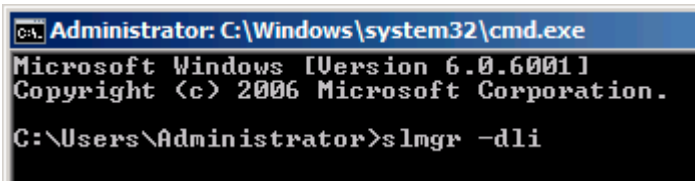
4. Activate Windows.


Windows Activation
Windows Activation
Activate Windows now
You must activate Windows within 60 days to continue using all Windows features.
Activate Windows online now
Ask me later
Show me other ways to activate
What is activation?
Read our privacy statement online
Cancel

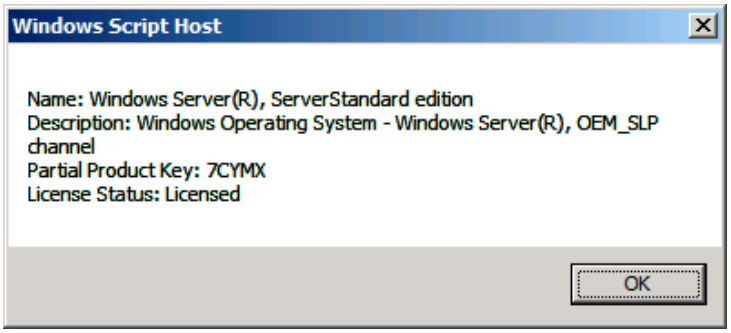
The Windows activation is complete.

For a server running a Server Core installation

1. At the command prompt, type **slmgr –dli**, and press **Enter**.

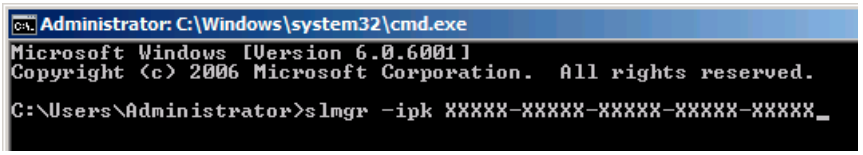


IMPORTANT: If the following message appears, Windows has already been activated on your system. Click ✕ to exit.

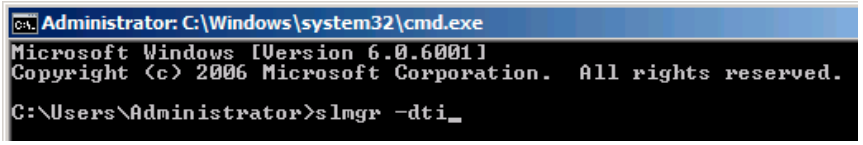

Windows Script Host
Name: Windows Server(R), ServerStandard edition
Description: Windows Operating System - Windows Server(R), OEM_SLP channel
Partial Product Key: 7CYMX
License Status: Licensed
OK

2. Type **slmgr –ipk <PID>**, and press **Enter**.

   * PID is your product key on the COA label.


Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.
C:\Users\Administrator>slmgr -ipk XXXXX-XXXXX-XXXXX-XXXXX-XXXXX

3. Type **slmgr –dti** to obtain an installation ID for Windows activation, and press **Enter**.

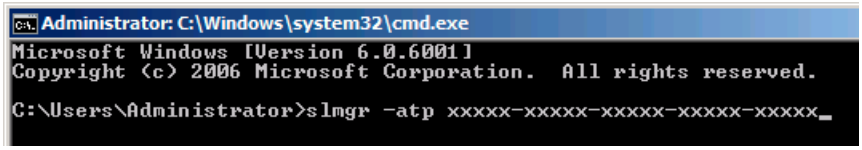

Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.
C:\Users\Administrator>slmgr -dti

4. See "%systemroot%\system32\slui\phone.inf" for the phone number of the Microsoft customer service.

5. Call the above number, inform the representative of the installation ID which you obtained in step 3, and receive a confirmation ID.

6. At the command prompt, type **slmgr –atp <CID>**, and press Enter.

   * CID is the confirmation ID that you received from the call center.


Administrator: C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6001]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.
C:\Users\Administrator>slmgr -atp xxxxx-xxxxx-xxxxx-xxxxx-xxxxx

The Windows activation is complete.

The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

> **IMPORTANT:** "/PAE option" is not supported on Windows Server 2008 Standard Edition.

In Windows Server 2008 system, the PAE option can be set by using Bcdedit.exe.

The setting procedure is as follows.

1. Click [Run] on [Start] menu.
2. Type "cmd.exe" in the [Open:] box to start command prompt.
3. Execute following command line.

   bcdedit /set pae forceenable
4. Reboot the system.

   The setting mentioned above enables after reboot.
5. Execute following command line on command prompt.

   bcdedit

   Confirm "pae ForceEnable" exists in "Windows boot loader".

The setting for PAE option is now completed.

Refer following site about Bcdedit.exe.

"Boot Configuration Data Editor Frequently Asked Questions"

http://technet.microsoft.com/en-us/library/cc721886.aspx

SETTING FOR SOLVING PROBLEMS

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix E

Installing Windows Server 2003 x64 Editions

This section explains how to install the Windows Server 2003 x64 Editions.

NOTICE

Read the following notes or information before installing the Windows Server 2003 x64 Editions.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD attached to your server supports the following optional boards;

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device" and "Installing Optional Mass Storage Driver" of "Parameter File Creator" in Chapter 6.

- Controllers supporting installation of OS with Express Setup
  - Internal RAID Controller (equivalent to N8103-116A)
  - N8103-116A RAID Controller (128MB, RAID0/1)
  - N8103-117A RAID Controller (128MB, RAID0/1/5/6)
  - N8103-118A RAID Controller (256MB, RAID0/1/5/6)
  - Onboard RAID Controller (LSI Embedded MegaRAID™)
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*
  - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)

  * Option

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2 x64 Edition
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media (No Service Pack)

Installing Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

Updating System

If you modified the Windows system, execute "Update the system" in the Autorun Menu.

Re-installing to the Hard Disk Drive which has been upgraded to Dynamic Disk

If you want to leave the existing partition when installing the system on the hard disk drive upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.

Floppy Disk Drive

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive if necessary.

About the System Partition Size

The system partition size can be calculated from the following formula.

Size necessary to install the system	+ Paging File Size + Dump File Size + Application Size
Size necessary to install the system	= 4100MB (Windows Server 2003 x64 Editions)
	= 4100MB (Windows Server 2003 x64 Editions with ServicePack 2)
	= 5900MB (Windows Server 2003 x64 Editions + Service Pack 2 CD-ROM)
Paging File Size (Recommended)	= Mounted Memory Size * 1.5
Dump file Size	= Mounted Memory Size + 1MB
Application Size	= Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- Regardless of the size of the mounted memory, or the Write debugging information (type of memory dump), the maximum size of the dump file is 'The size of the mounted memory + 1MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

4100MB + (512MB * 1.5) + (512MB + 1MB) + Application Size
= 5381MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

INSTALLING WINDOWS SERVER 2003 X64 EDITIONS

Preparations for Installation

- NEC EXPRESSBUILDER DVD
- Microsoft Windows Server 2003 R2 Standard x64 Edition (CD-ROM) / Microsoft Windows Server 2003 R2 Enterprise x64 Edition (CD-ROM)
- Microsoft Windows Server 2003 x64 Editions Service Pack 2 (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER

Creating "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER"

Before installing, create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER.

> **NOTE:** If you have already "Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003 x64 Editions, you do not need to create it again.

You can create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER with the following two procedures.

Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

If you have only NEC Express5800 Server to create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER, use this procedure.

If Windows Server 2003 can be operated on NEC Express5800 Server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl**, **Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create the OEM-Disk for Windows] from [Tools Menu] step.
6. Insert a floppy disk into the floppy disk drive.
7. Select [Create an Windows Server 2003 x64 Editions OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].
8. Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Create from [Autorun Menu]

This menu requires Microsoft Windows XP, Vista or Windows Server 2003(or later).

You can create Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Start the Operating System.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.

   The Menu will appear.
4. Insert the floppy disk into the floppy disk drive.
5. Click [Create drive disk] and select [OEM-Disk for Windows Server 2003 x64 Edition].

   NOTE: You can do the same operation with the menu appeared by the Right-click.

6. Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Windows Server 2003 x64 Editions Clean Installation

This section explains how to perform a clean installation of Windows Server 2003 x64 Editions.

1. Turn on the system power.
2. Insert the Windows Server 2003 x64 Edition CD-ROM into the optical disk drive.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

   After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

   If no bootable operating system exists on the hard disk drive, this step is unnecessary.

   The Windows Server 2003 x64 Editions setup screen will appear.

   If the screen is not displayed, **Enter** was not pressed properly.

   Begin after turning on the system power again.
4. Press **F6** in a few seconds when the window is in either of the following states.
   - "Setup is inspecting your computer's hardware configuration ..." or "Press F6 if you need to install a third party SCSI or RAID driver..." is displayed.
   - A screen with a solid blue background is displayed.

   IMPORTANT: There is no visible indication on screen when **F6** has been pressed
5. When the following message is displayed, press **S**.

   Setup could not determine the type of one or more mass storage devices installed in your system, or you have chosen to manually specify an adapter. Currently, Setup will load support for the following mass storage devices.
6. The following message is displayed.

   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.

   Insert the Windows Server 2003 x64 Edition OEM-Disk for EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

   A list of mass storage devices is displayed.
   - If the LSI Embedded MegaRAID™ is used, go to Step 8.
   - If the LSI Embedded MegaRAID™ is not used, go to Step 7.

7. Select the [Intel(R) ICH10R SATA AHCI Controller] and press **Enter**.

The screen of Step 5 is displayed.

– If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is used:

Press **S**.

The screen of Step 6 is displayed. Press **Enter**, and go to Step 8.

– If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is not used:

Go to Step 9.

8. Select the proper Controller and press **Enter**.

The screen of Step 5 is displayed.

– [LSI MegaRAID SAS RAID Controller Driver (Server 2003 for x64)]
(When Internal RAID Controller (equivalent to N8103-116A) is installed.)

– [LSI MegaRAID SAS RAID Controller Driver (Server 2003 for x64)]
(When N8103-116A/117A/118A RAID Controller is installed.)

– [LSI Embedded MegaRAID (Windows XP/2003 64-bit)]
(When Onboard RAID Controller (LSI Embedded MegaRAID™) is used.)

9. <If the SCSI Controller N8103-75/107 is connected>

Press **S**.

The screen of Step 6 is displayed. Press **Enter**, and go to Step 10.

<If the SCSI Controller N8103-75/107 is not connected>

Press **Enter**, and go to Step 11.

10. A list of mass storage devices is displayed.

Select the [Adaptec Ultra320 SCSI Cards (Windows 64-bit)] and press **Enter**.

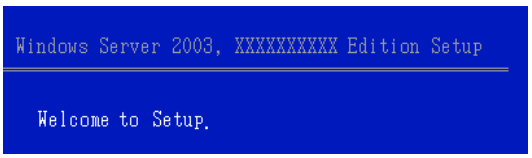
IMPORTANT: If the following message is displayed when you use the N8103-75/107 SCSI controller, press **S**.

> The driver you provided seems to be newer than the Windows default driver.
> Windows already has a driver that you can use for "Adaptec Ultra 320 SCSI Cards (Windows64-bit)"
> Unless the device manufacturer prefers that you use the driver on the floppy disk, you should use the driver in Windows.

The screen of Step 5 is displayed.

Press **Enter**, and go to Step 11.

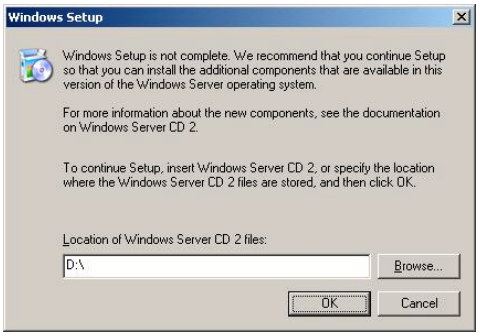
11. When the following message is shown, press **Enter** to start "Welcome to Setup".



IMPORTANT: If you install Windows Server 2003 x64 Editions on the hard disk larger than 2,097,152MB (2TB), you can specify only a value equal to or less than 2,097,152MB as partition size.

12. When the installation of Windows Server 2003 x64 Edition has finished, the system reboots automatically.

13. The [Windows Setup] screen will be displayed after logged on to the system.


Windows Setup
Windows Setup is not complete. We recommend that you continue Setup so that you can install the additional components that are available in this version of the Windows Server operating system.
For more information about the new components, see the documentation on Windows Server CD 2.
To continue Setup, insert Windows Server CD 2, or specify the location where the Windows Server CD 2 files are stored, and then click OK.
Location of Windows Server CD 2 files:
D:\
Browse...
OK
Cancel

IMPORTANT:

- In this case, the [Windows Setup] screen may not be displayed. Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 according to the following procedures.
- You can install Microsoft Windows Server 2003 R2 x64 Edition DISC 2 after the application of "System update". Be sure to install Microsoft Windows Server 2003 R2 x64 Edition DISC 2. In this case, note that the [Windows Setup] screen is not displayed.

14. Insert Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM into the optical disk drive.

Confirm the parameters and click [OK].

15. When the installation has completed, remove Microsoft Windows Server 2003 R2 x64 Edition DISC 2 CD-ROM from the optical disk drive, and restart the system.

After installation is completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of this chapter.

Updating the System - Applying Service Pack -

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security. The system update is recommended.

It is necessary to use ServicePack2 or more. ServicePack 2 need not be applied again when Windows Server 2003 x64 Editions CD-ROM where ServicePack 2 is included is used and it is installed.

If you install Windows Server 2003 x64 Editions CD-ROM which contains Service Pack 2, you do not have to apply "Hotfix for Windows x64" or "Hotfix for Windows Server 2003 (KB921411)".

Go on the section of "Updating the System".

Perform "Updating the System" and application of the "Hotfix (KB921411)".

IMPORTANT: In the situation below, make sure to apply "Updating the System" and "Hotfix (KB921411)".

- Modified system configuration
- Recovered the system using recovery process.

NOTE: If you use Windows Server 2003 x64 Editions CD-ROM which includes Service Pack 2, the application of "Hotfix (KB921411)" is not required.

Application Process of the Hotfix (KB921411)

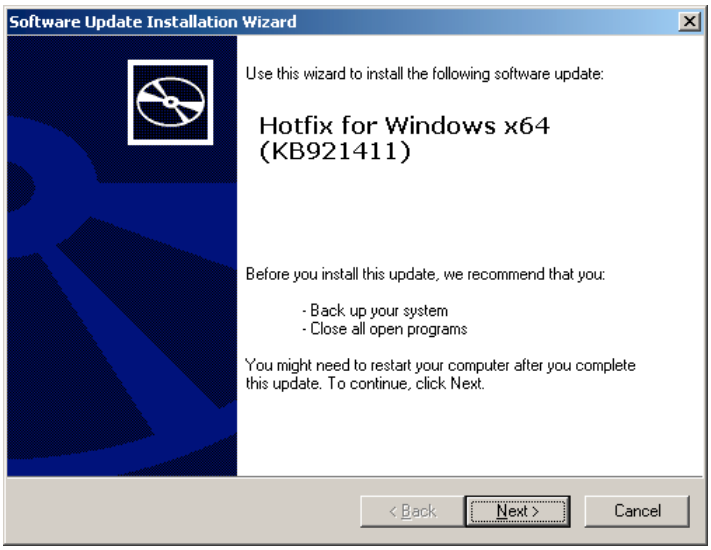
Apply the "Hotfix (KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to the server (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Click Start menu and [Run], and then execute the following command.

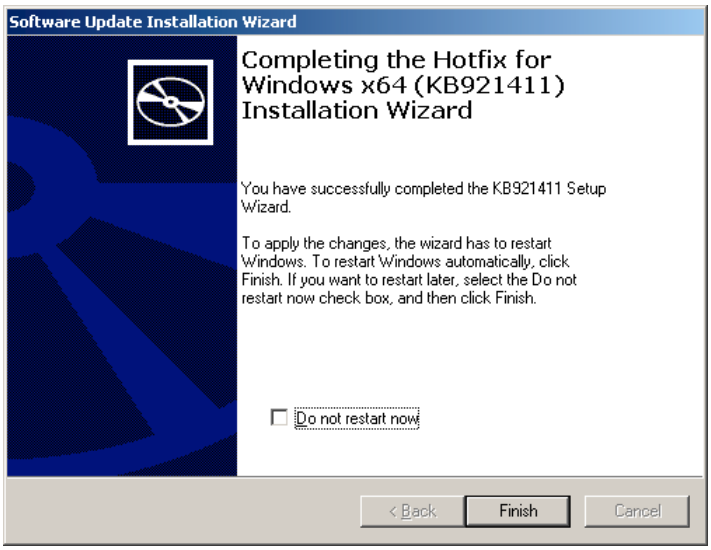
   <When Windows Server 2003 x64 Editions is used>

   \009\win\winnt\w2k3amd\qfe\enu\kb921411.exe
4. When the following message is displayed, click [Next].

   After that, follow the message to continue the process.


Software Update Installation Wizard
Use this wizard to install the following software update:
Hotfix for Windows x64 (KB921411)
Before you install this update, we recommend that you:
- Back up your system
- Close all open programs
You might need to restart your computer after you complete this update. To continue, click Next.
< Back
Next >
Cancel

5. When the following message is displayed, make sure to click [Finish] to restart the system.


Software Update Installation Wizard
Completing the Hotfix for Windows x64 (KB921411) Installation Wizard
You have successfully completed the KB921411 Setup Wizard.
To apply the changes, the wizard has to restart Windows. To restart Windows automatically, click Finish. If you want to restart later, select the Do not restart now check box, and then click Finish.
Do not restart now
< Back
Finish
Cancel

With that, application process of the Hotfix (KB921411) is finished.

Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

Follow this process after Hotfix for Windows x64 (KB921411) or Hotfix for Windows Server 2003 (KB921411) had been applied.

NOTE: If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

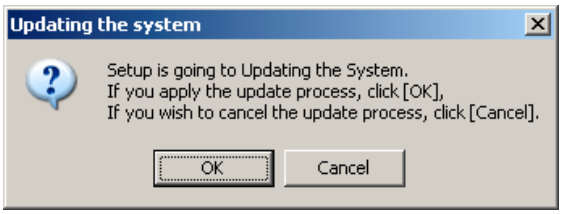
1. Log on to the system with the account that has administrative privilege (e.g.administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of server.

   The Autorun Menu will be displayed
3. Left-click on [Setup Windows], and then click [Update the system].

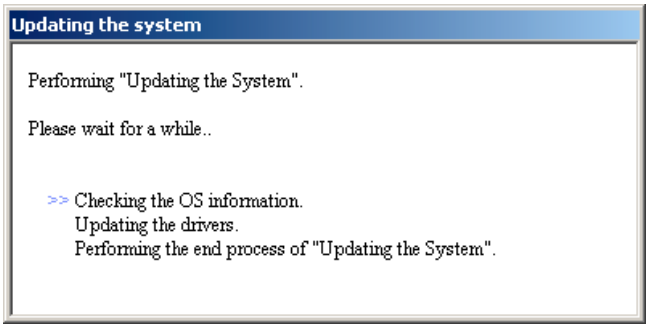
NOTE: Right-clicking on the Autorun Menu produces the same outcome.

4. Follow the message of the screen to proceed the application.

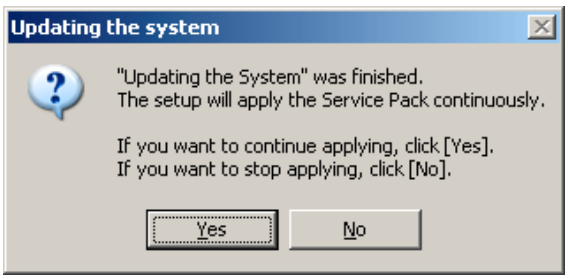
   [OK] dialog box will be displayed.


Updating the system
Setup is going to Updating the System.
If you apply the update process, click [OK],
If you wish to cancel the update process, click [Cancel].
OK
Cancel

NOTE: The following box appears during the update if you have deployed a full installation of Windows Server 2003 x64 Edition. Wait until the update completes.


Updating the system
Performing "Updating the System".
Please wait for a while..
>> Checking the OS information.
Updating the drivers.
Performing the end process of "Updating the System".

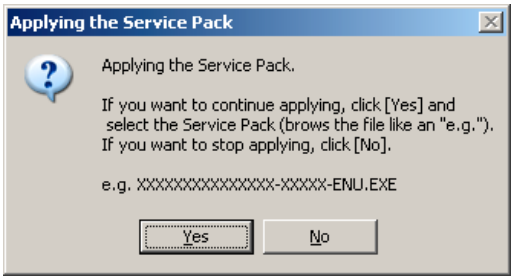
5. When the following message appears, "Updating the System" was finished.


Updating the system
"Updating the System" was finished.
The setup will apply the Service Pack continuously.
If you want to continue applying, click [Yes].
If you want to stop applying, click [No].
Yes
No

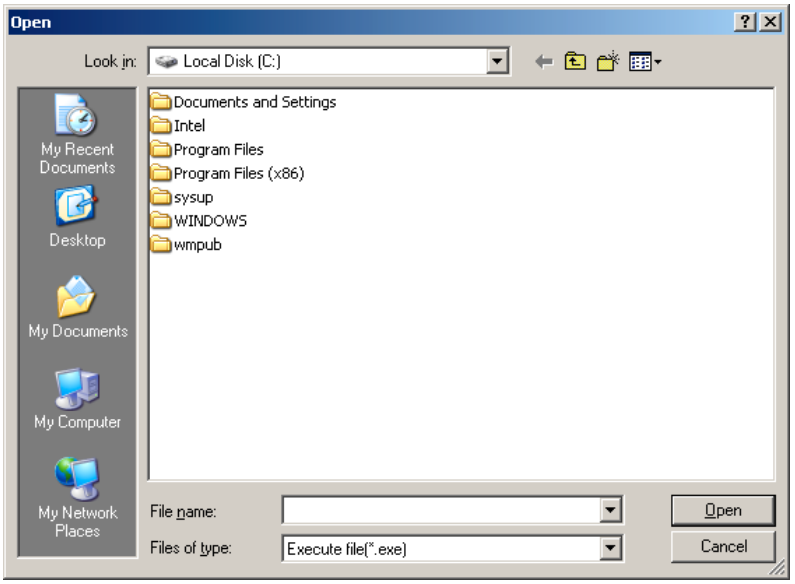
When you apply Service Pack: Click [Yes], and then go to Step 6.

When you don't apply Service Pack: Click [No], and then go to Step 8.

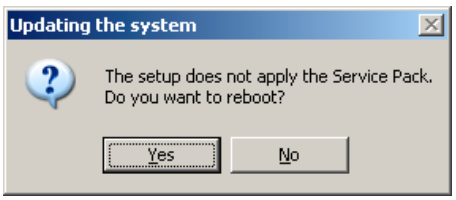
6. When the following message appears, click [Yes].


Applying the Service Pack
Applying the Service Pack.
If you want to continue applying, click [Yes] and
select the Service Pack (brows the file like an "e.g.").
If you want to stop applying, click [No].
e.g. XXXXXXXXXXXXXXX-XXXXX-ENU.EXE
Yes
No

7. When the following message appears, select a Service Pack and click [Open] and then, according to a message, please apply it.



8. When the following message appears, click [Yes] to restart the system.



The system has been updated.

Recovery Process

If "Updating the System" is executed before the application of the "Hotfix for Windows x64 (KB921411)", "!" may be displayed on the USB root hub.

If "!" is displayed on the USB root hub, perform application of the "Hotfix for Windows x64 (KB921411)" and the "Updating the System" according to the following process.

1. Start the Windows Explorer, and click [Tools] and [Folder Options].
2. Select [Files and Folders] - [Hidden files and folders] - [Show hidden files and folders] radio button from Advanced settings in the [View] tab.
3. Check off the following check box in the [Files and Folders] from Advanced settings in the [View] tab, and then click [OK].
   - Hide extensions for know file type
   - Hide protected operating system files [Recommended]

   When the message "You have chosen to display protected operating system files..." is displayed, click [Yes].
4. Make sure of the files.

   Open "<System drive:>\WINDOWS\system32\drivers" directory, and make sure usbhub.sys and usbport.sys are exists in the directory.

   If you can not found them, copy the files according to the following process.

   (1) Open "<System drive:>\WINDOWS\system32\dllcache" directory.

   (2) Copy usbhub.sys and usbport.sys from the directory noted above to "<Systemdrive:>\WINDOWS\system32\drivers".
5. Restart the system.
6. Refer to [Application process of the Hotfix (KB921411)] and apply the "Hotfix for Windows x64 (KB921411)".
7. Refer to [Application process of "Updating the System"] and execute "Updating the System".
8. Restart the system.

   With that, process is finished.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

PROSet

NOTE: All of the operation that related to Intel® PROSet is must be executed by administrator privileges. Operation by [Remote Desktop Connection] is prohibited.

Without changing any parameter when opened the properties of adapter teaming, please click the [Cancel] button for close the dialog.

Click [OK] button will cause temporary loss of network connectivity.

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhances throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "dxsetup.exe" in the following directory.

   \009\win\winnt\w2k3amd\ma21\apps\prosetdx\winx64

   The [Intel(R) PROSet - InstallShield Wizard] dialog starts.

4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finished].
9. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

IP addresses is not be able to set when the "Internet Protocol (TCP/IP)" check box OFF.

This phenomenon will occur with the certain condition.

Check ON the "Internet Protocol (TCP/IP)" check box and IP address will be able to set.

When PROSet is not installed

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].

When PROSet is installed

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

> **NOTE:** It is recommend to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setting for Solving Problems" described later in this chapter.

Re-install the Network Driver

The network driver will be installed automatically.

Optional Network Board Driver

For utilize an optional Network Board (N8104-111/112/119/120/121/122/125/126/123A), the network driver will be installed automatically. Therefore, the driver attached to the Network board should not be used.

If you want to use optional Network Board (N8104-111), install the driver stored in NEC EXPRESSBUILDER DVD.

- In case of utilizing (N8104-111)

  "\009\win\winnt\w2k3amd\ma21\pro100\winx64"

- In case of utilizing (N8104-112/119/120/121/122/125/126)

  "\009\win\winnt\w2k3amd\ma21\pro1000\winx64"

If the procedure of installation is not clear, refer to the installation procedure described in the section "Installation of the Optional Network Board Driver".

In case of utilizing (N8104-123A)

Please refer to the installation manual provided with the board.

Installation of the Optional Network Board Driver

1. Start Device Manager.
2. Click [Network adapters] and double-click [(Network Adapter Name)].

   [(Network Adapter Name) Properties] appears.

   NOTE: [(Intel (R) PRO/1000...)] is the name of On-Board adapter. All other names show the Optional Network Board.

3. Click [Driver] tab and click [Update Driver...]. [Hardware Update Wizard] appears.
4. Select the [Install from a list or specific location (Advanced)] radio button and click [Next].
5. Select the [Search for the best driver in these locations] radio button and check off the [Search removable media (floppy, CD-ROM...)] check box.
6. Check the [Include this location in the search] check box and when using [(N8104-111)], specify
   [\009\win\winnt\w2k3amd\ma21\pro100\winx64].

   Then click [Next].

   When using [(N8104-112/119/120/121/122/125/126)], specify
   [\009\win\winnt\w2k3amd\dl3\pro1000\winx64].

   Then click [Next].
7. Click [Finish].

Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

Adapter Fault Tolerance (AFT) is a feature that creates a group containing more than one adapter and automatically converts the process of the working adapter to the other adapter in the group when any trouble occurred on that adapter.

Adaptive Load Balancing (ALB) is a feature that creates a group containing more than one adapter and enhances the throughput by operating packet transmission from the server by all the adapters.

This feature includes AFT feature.

IMPORTANT:

- All the adapters specified as a group of Adapter Teaming must exist on the same LAN. If they are connected to the separate switches, they will not work normally.
- The adapters specified as a group of Adaptive Load Balancing (ALB) can be connected to only Switching Hub.
- When exchange the mother board or option network card, make sure to remove the adapter team before exchanges and recreate the adapter team after exchange complete.

Setup Teaming

IMPORTANT:

- AFT/ALB setting must be done after System Update completed.
- N8104-120/121/122/125/126 does not support SFT.
- Please confirm the port setting of switching hub (L2) matches the server network adapter Teaming mode.

1. Open the [Device Manager].
2. Open [Network adapters] → [Intel(R) xxx] properties.
3. Click [Teaming] tab and check the [Team this adapter with other adapters] check box.

   Click [New Team].
4. Fill the name of the team in [Specify a name for the team] and click [Next].
5. Include the adapter to the team and click [Next].
6. Select a team type ([Adapter Fault Tolerance]/[Adaptive Load Balancing]).

   Click [Next].
7. Click [Finish].

8. Click [TEAM: "Team name"] from [Device manager] → [Network adapters] to modify the team. Click [Settings] tab and click [Modify Team] button.
9. Refer to the following procedure to set the team member adapter priority status.
   – Set Primary

     Point the adapter and click [Set Primary] button.

   – Set Secondary

     Point the adapter and click [Set Secondary] button.

   NOTE: Adapter priority config can be confirmed by the following procedure:

   1. Click [TEAM: "Team name"] from [Device manager]→[Network adapters].
   2. Click [Settings] and confirm Adapters in team list.

10. Click [Test Switch] → [Run test] to confirm the adapter team is properly setup.

    Confirm the result in [Test results].
11. Reboot the system.

Remove Team

1. Open the [Device Manager].
2. Click [Network adapters], and open [TEAM: "Team name"] properties.
3. Click [Setting] tab.
4. Click [Remove Team] button.
5. Click [Yes] to the message.
6. Confirm [TEAM: "Team name"] adapter in not existing in [Network adapters] tree and reboot the system.

Setting WOL

Refer to the following procedure to enable WOL.

When PROSet is not installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Allow the computer to turn off this device to save power"	ON	ON
"Allow this device to bring the computer out of standby"	OFF	ON

4. Click [Advanced] tab and point to [Enable PME].
5. Set the "Enable" in [Value].
6. Click [OK].
7. Reboot the system.

When PROSet is installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Wake On Directed Packet"	ON	ON
"Wake On Magic Packet"	ON	ON
"Wake on Magic Packet from power off state"	OFF	ON

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will be maintained until manually resetting are executed.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.

4. Click [OK].
5. Reboot the system.

Graphics Accelerator Driver

If you utilize standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.
Standard graphics accelerator drivers will be installed automatically.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "Install.bat" in the following directory.

   \009\win\winnt\w2k3amd\video\install.bat

4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.

5. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Installing SCSI Controller Driver (N8103-75/107)

If you use the SCSI Controller N8103-75/107, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SCSI Controller driver will be installed automatically.

Installing SCSI Controller Driver (N8103-95)

If you use the SCSI Controller N8103-95, you do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SAS Controller driver will be installed automatically.

Installing RAID Controller Driver (N8103-115)

The installation procedure depends on your environment.

Follow steps below appropriate to your environment.

● If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is used:

You do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

● If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is not used:

Install the driver by the following procedures.

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double-click the RAID Controller which Device Manager lists as Other device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "No, not this time" and click [Next].
5. Select "Install from a list or specific location [Advanced]" and click [Next].
6. Select "Don't search. I will choose the driver to install" and click [Next].
7. Select "SCSI and RAID controller" and click [Next].
8. Click [Have Disk..].
9. Insert "NEC EXPRESSBUILDER DVD" into the optical disk drive, enter "<drive letter>:\009\win\winnt\oemfd\w2k3amd\fd1" into "copy manufacturer's file from:" and click [OK].
10. Specify the following driver and click [Next].
    - [LSI Logic MegaRAID SAS 8880EM2 RAID Controller]

The installation of the driver is completed.

Restart the system.

About Windows Activation

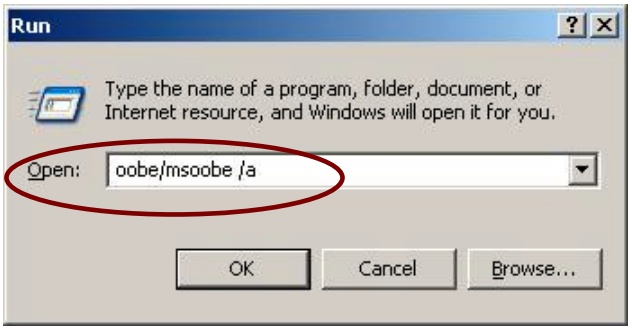
Windows Server 2003 x64 Editions must be activated before you can use Windows Server 2003 x64 Editions.

Windows activation process is as follows.

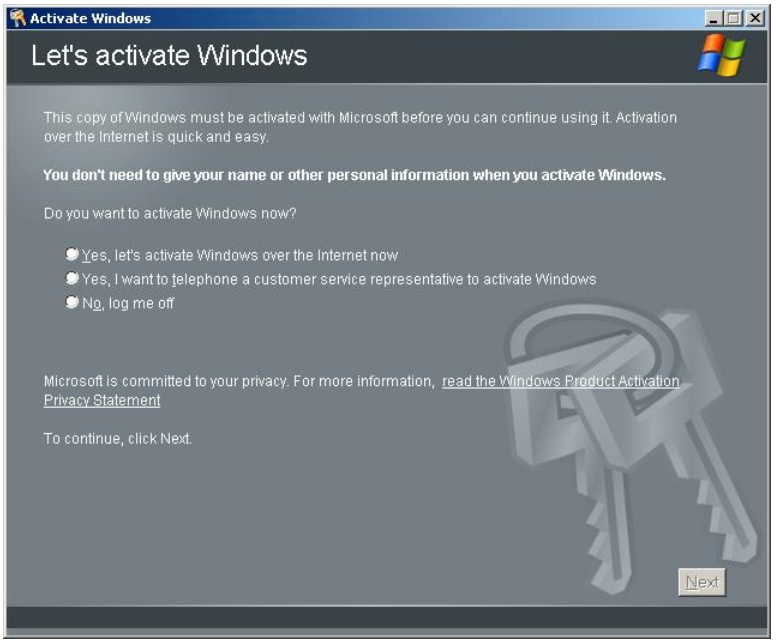
1. Click [Run] on [Start] menu.

   Type as follows in the [Open:] box, and click [OK].

   oobe/msoobe /a

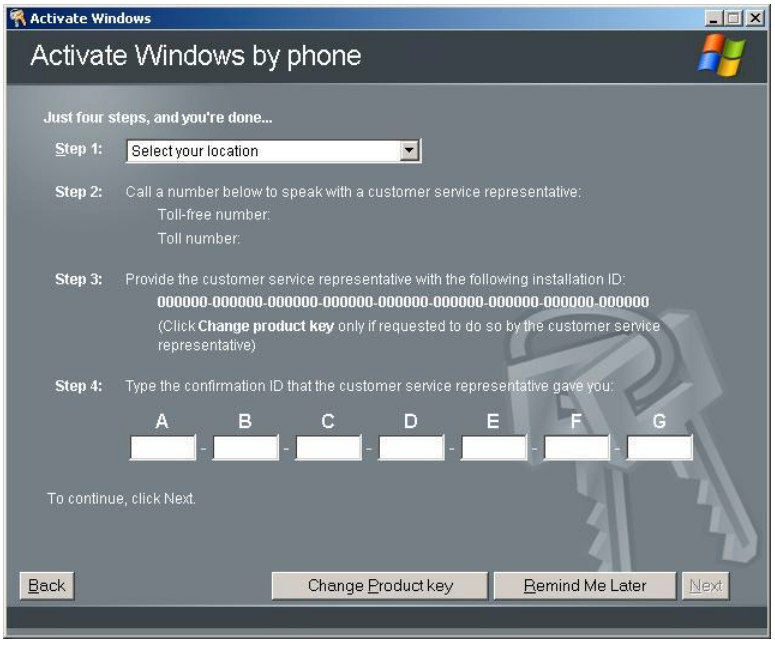


2. When the screen as follows is displayed, click [Next].


Activate Windows
Let's activate Windows
This copy of Windows must be activated with Microsoft before you can continue using it. Activation over the Internet is quick and easy.
You don't need to give your name or other personal information when you activate Windows.
Do you want to activate Windows now?
Yes, let's activate Windows over the Internet now
Yes, I want to telephone a customer service representative to activate Windows
No, log me off
Microsoft is committed to your privacy. For more information, read the Windows Product Activation Privacy Statement
To continue, click Next.
Next

The following screen is displayed.

3. Process "Windows activation" according to the following message.


Activate Windows
Activate Windows by phone
Just four steps, and you're done...
Step 1:
Select your location
Step 2:
Call a number below to speak with a customer service representative:
Toll-free number:
Toll number:
Step 3:
Provide the customer service representative with the following installation ID:
000000-000000-000000-000000-000000-000000-000000-000000-000000
(Click Change product key only if requested to do so by the customer service representative)
Step 4:
Type the confirmation ID that the customer service representative gave you:
A B C D E F G
To continue, click Next.
Back
Change Product key
Remind Me Later
Next

SETTING FOR SOLVING PROBLEMS

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix F

Installing Windows Server 2003

This section explains how to install the Windows Server 2003.

BEFORE INSTALLING WINDOWS SERVER 2003

Read the following notes or information before installing the Windows Server 2003.

Optional Board Supported by NEC EXPRESSBUILDER

The NEC EXPRESSBUILDER DVD attached to your server supports the following optional boards;

> **NOTE:** If you want to install the other boards by using a driver floppy disk ("OEM-Disk for Mass storage device"), except ones listed below, see "Installing with the OEM-Disk for Mass storage device" and "Installing Optional Mass Storage Driver" of "Parameter File Creator" in Chapter 6.

- Controllers supporting installation of OS with Express Setup
  - Internal RAID Controller (equivalent to N8103-116A)
  - N8103-116A RAID Controller (128MB, RAID0/1)
  - N8103-117A RAID Controller (128MB, RAID0/1/5/6)
  - N8103-118A RAID Controller (256MB, RAID0/1/5/6)
  - Onboard RAID Controller (LSI Embedded MegaRAID™)
- Other controllers
  - N8103-75 SCSI Controller*
  - N8103-95 SCSI Controller*
  - N8103-104A SAS Controller*
  - N8103-107 SCSI Controller*
  - N8103-115 RAID Controller (512 MB, RAID0/1/5/6)

  * Option

Service Pack Which EXPRESSBUILDER Supports

The NEC EXPRESSBUILDER DVD attached to the server supports following combination of the OS installation media and Service Pack.

- Windows Server 2003 R2
  - OS installation media (with Service Pack 2)
  - OS installation media (No Service Pack) + Service Pack 2
  - OS installation media(No Service Pack)
- Windows Server 2003
  - OS installation media (with Service Pack 1)
  - OS installation media (with Service Pack 1) + Service Pack 2

Application of Service Pack

You can install the Service Pack on the server. When the Service Pack is not attached to your system, prepare it by yourself.

When installing Windows Server 2003 R2, it is not necessary to apply Service Pack 1.

Updating System

If you modified the Windows system, execute "Update the System" in the Autorun Menu.

Re-installing to the Hard Disk which has been upgraded to Dynamic Disk

If you want to leave the existing partition when installing the system on the hard disk upgraded to Dynamic Disk, note the following issue:

- Do not select the partition that OS had been installed as the partition to install the OS newly.
- Select "Use the current File System" for the format of OS partition.

Mounting MO Device

Do not mount an MO device on your server during the Windows installation.

About Removable Media

Do not set removable media, such as DAT, into the device mounted on your server during the OS installation.

Floppy Disk Drive

The internal floppy disk drive is not included in your system at the standard configuration. Prepare the optional USB floppy disk drive if necessary.

About the Upgrade to Windows Server 2003 R2

The "in-place upgrade" from Windows Server 2003 to Windows Server 2003 R2 is not recommended because it may overwrite any files or registries, and cause unexpected impact to the system or the applications.

If you install Windows Server 2003 R2, backup user data referring "Windows Server 2003 Clean Installation", and reinstall Windows Server 2003 R2.

> **NOTE:** "in-place upgrade" is to perform overwrite upgrade from Windows Server 2003 which already installed to Windows Server 2003 R2.

About the System Partition Size

The system partition size can be calculated from the following formula.

Size necessary to install the system	+ Paging File Size + Dump File Size + Application Size
Size necessary to install the system	= 3500MB (Windows Server 2003 R2)
	= 3500MB (Windows Server 2003 with Service Pack 1)
	= 3500MB (Windows Server 2003 R2 with Service Pack 2)
	= 5300MB (Windows Server 2003 R2 + Service Pack 2)
	= 5300MB (Windows Server 2003 with Service Pack 1 + Service Pack 2)
Paging File Size (Recommended)	= Mounted Memory Size * 1.5
Dump file Size	= Mounted Memory Size + 12MB
Application Size	= Required Size

IMPORTANT:

- The above-mentioned paging file size is recommended for collecting debug information (memory dump). The paging file with initial size large enough to store the dump file in the boot drive is required.
  Correct debug information might not be able to be collected due to virtual memory shortage when the paging file is insufficient, so set an enough size of the paging file with the entire system.
- The maximum paging file size which can be set on one partition is 4095MB. If the above paging file size exceeds 4095MB, specify 4095MB for the paging file size.
- The maximum dump file size for the system with more than 2GB memory mounted is '2048MB + 12MB'.
- If you install any application program or the like, add necessary space to the partition to install these programs.

For example, if the mounted memory size is 512MB, the partition size will be calculated by the above formula as follows:

3500MB + (512MB * 1.5) + (512MB + 12MB) + Application Size
= 4792MB + Application Size

Dividing into the partition of the recommended size into multiple disks as written below will solve problem that it cannot be reserved in one disk.

1. Set the "Size required for installation + Paging file size".
2. See Chapter 5 and set that debugging information (equivalent to the dump file size) is to be written to a separate disk.

   (If the disk does not have enough free space to enable the dump file size to be written, then after installing the system using the "Size required for installation + Paging file size", install an additional new disk.)

INSTALLING WINDOWS SERVER 2003

Preparations for Installation

- NEC EXPRESSBUILDER DVD
- Microsoft Windows Server 2003 Standard Edition (CD-ROM)/ Microsoft Windows Server 2003 Enterprise Edition (CD-ROM), Microsoft Windows Server 2003 R2 Standard Edition (CD-ROM)/ Microsoft Windows Server 2003 R2 Enterprise Edition (CD-ROM)
- Windows Server 2003 Service Pack (CD-ROM)
- User's Guide
- Getting Started
- Windows Server 2003 OEM-Disk for EXPRESSBUILDER

Creating "Windows Server 2003 OEM-Disk for EXPRESSBUILDER"

Before installing, create Windows Server 2003 OEM-Disk for EXPRESSBUILDER.

> **NOTE:** If you have already "Windows Server 2003 OEM-Disk for EXPRESSBUILDER" for NEC Express5800 Server which you are going to install Windows Server 2003, you do not need to create it again.

You can create Windows Server 2003 OEM-Disk for EXPRESSBUILDER with the following two procedures.

Create from the menu which appears when running NEC Express5800 Server with NEC EXPRESSBUILDER.

If you have only NEC Express5800 Server to create Windows Server 2003 OEM-Disk for EXPRESSBUILDER, use this procedure.

If Windows Server 2003 or Windows can be operated on NEC Express5800 Server, you can use the other procedure described later.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Turn on your NEC Express5800 Server.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
4. Press the RESET switch or press **Ctrl**, **Alt** and **Delete** to reboot the server. (You may also turn off and then on again to reboot the server.)

   The system will boot from the DVD-ROM and NEC EXPRESSBUILDER starts.
5. Select [Create the OEM-DISK for Windows] from [Tools Menu] step.
6. Insert a floppy disk into the floppy disk drive.
7. Select [Create an Windows Server 2003 OEM-Disk for EXPRESSBUILDER] at [Create OEM-Disk] and click [Perform].
8. Windows Server 2003 OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Create from [Autorun Menu]

This menu requires Microsoft Windows XP, Vista or Windows Server 2003 (or later).

You can create Windows Server 2003 OEM-Disk for EXPRESSBUILDER from [Autorun Menu], if you have the computer on which the above operating systems operate.

Follow the steps below.

1. Prepare one 3.5-inch floppy disk.
2. Start the Operating System.
3. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.

   The Menu will appear.
4. Insert the floppy disk into the floppy disk drive according to the message.
5. Click [Create drive disk] and select [OEM-Disk for Windows Server 2003].

   NOTE: You can do the same operation with the menu appeared by the Right-click.

6. Windows Server 2003 OEM-Disk for EXPRESSBUILDER will be created.

   Write-protect and attach a label, then keep it safely.

Windows Server 2003 Clean Installation

This section explains how to perform a clean installation of Windows Server 2003.

1. Turn on the system power.
2. Insert the Windows Server 2003 CD-ROM into the optical disk drive.
3. Press **Ctrl** + **Alt** + **Delete** to reset the system.

   After a bootable operating system has been installed on the hard disk drive, press **Enter** while the message "Press any key to boot from CD..." is displayed at the top of the screen.

   If no bootable operating system exists on the hard disk drive, this step is unnecessary.

   The Windows Server 2003 setup screen will appear.

   If the screen is not displayed, **Enter** was not pressed properly.

   Begin after turning on the system power again.
4. Press **F6** in a few seconds when the window is in either of the following states.
   - "Setup is inspecting your computer's hardware configuration ..." or "Press F6 if you need to install a third party SCSI or RAID driver..." is displayed.
   - A screen with a solid blue background is displayed.

   IMPORTANT: There is no visible indication on screen when **F6** has been pressed.
5. When the following message is displayed, press **S**.

   ```
   Setup could not determine the type of one or more mass storage devices
   installed in your system, or you have chosen to manually specify an adapter.
   Currently, Setup will load support for the following mass storage devices.
   ```
6. The following message is displayed.

   ```
   Please insert the disk labeled
   manufacturer-supplied hardware support disk
   into Drive A:
   *Press ENTER when ready.
   ```

   Insert the Windows Server 2003 OEM-Disk for EXPRESSBUILDER into the floppy disk drive, and press **Enter**.

   A list of mass storage devices is displayed.

   - If the LSI Embedded MegaRAID™ is used, go to Step 8.
   - If the LSI Embedded MegaRAID™ is not used, go to Step 7.

7. Select the [Intel(R) ICH10R SATA AHCI Controller] and press **Enter**.

The screen of Step 5 is displayed.

– If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is used:

Press **S**.

The screen of Step 6 is displayed. Press **Enter**, and go to Step 8.

– If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is not used:

Go to Step 9.

8. Select the proper Controller and press **Enter**.

The screen of Step 5 is displayed.

– [LSI MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)]
(When Internal RAID Controller (equivalent to N8103-116A) is installed.)

– [LSI MegaRAID SAS RAID Controller Driver (Server 2003 32-bit)]
(When N8103-116A/117A/118A RAID Controller is installed.)

– [LSI Embedded MegaRAID (Windows XP/2003)]
(When Onboard RAID Controller (LSI Embedded MegaRAID™) is used.)

9. <If the SCSI Controller N8103-75/107 is connected>

Press **S**.

The screen of Step 6 is displayed. Press **Enter**, and go to Step 10.

<If the SCSI Controller N8103-75/107 is not connected>

Go to Step 11.

10. A list of mass storage devices is displayed.

Select the [Adaptec Ultra320 SCSI Cards (Windows 32-bit)] and press **Enter**.

IMPORTANT: If the following message is displayed when you use the N8103-75/107 SCSI controller, press **S**.

> The driver you provided seems to be newer than the Windows default driver.
> Windows already has a driver that you can use for "Adaptec Ultra320 SCSI Cards (Windows 32-bit)"
> Unless the device manufacturer prefers that you use the driver on the floppy disk, you should use the driver in Windows.

The screen of Step 5 is displayed.

Go to Step 11.

11. <If the SCSI Controller N8103-95 is connected>

Press **S**.

The screen of Step 6 is displayed. Press **Enter**, and go to Step 12.

<If the SCSI Controller N8103-95 is not connected>

Press **Enter**, and go to Step 13

12. A list of mass storage devices is displayed.

Select the [Adaptec Ultra160 SCSI Cards (Win Server 2003)] and press **Enter**.

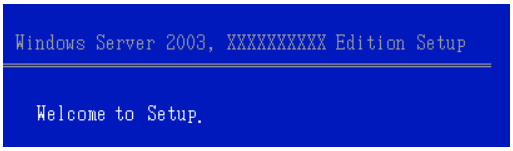
IMPORTANT: If the following message is displayed when you use the N8103-95 SCSI controller, press **S**.

> The driver you provided seems to be newer than the Windows default driver.
> Windows already has a driver that you can use for "Adaptec Ultra 160 SCSI Cards (Win Server 2003)"
> Unless the device manufacturer prefers that you use the driver on the floppy disk, you should use the driver in Windows.

The screen of Step 5 is displayed.

Press **Enter**, and go to Step 13.

13. When the following message is shown, press **Enter** to start "Welcome to Setup".

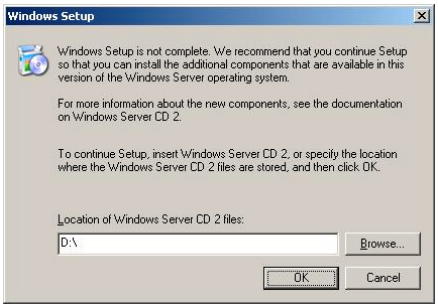


IMPORTANT: If you install Windows Server 2003 on the hard disk larger than 2,097,152MB (2TB), you can specify only a value equal to or less than 2,097,152MB as partition size.

14. When the installation of Windows Server 2003 has finished, the system reboots automatically.

- Windows Server 2003 has installed: Go on the step 14
- Windows Server 2003 R2 has installed: Go on the step 11

15. When Windows Server 2003 R2 has been installed, the [Windows Setup] screen will be displayed after logged on to the system.


Windows Setup
Windows Setup is not complete. We recommend that you continue Setup so that you can install the additional components that are available in this version of the Windows Server operating system.
For more information about the new components, see the documentation on Windows Server CD 2.
To continue Setup, insert Windows Server CD 2, or specify the location where the Windows Server CD 2 files are stored, and then click OK.
Location of Windows Server CD 2 files:
D:\
Browse...
OK
Cancel

IMPORTANT:

- In this case, the [Windows Setup] screen may not be displayed. Be sure to install Microsoft Windows Server 2003 R2 DISC 2 according to the following procedures.
- You can install Microsoft Windows Server 2003 R2 DISC 2 after the application of "System update". Be sure to install Microsoft Windows Server 2003 R2 DISC 2. In this case, note that the [Windows Setup] screen is not displayed.

16. Insert Microsoft Windows Server 2003 R2 DISC 2 CD-ROM into the optical disk drive.

Confirm the parameters and click [OK].

17. When the installation has completed, remove Microsoft Windows Server 2003 R2 DISC 2 CD-ROM from the optical disk drive, and restart the system.

18. When the installation has completed, be sure to execute the tasks described in "Driver Installation and Advanced Settings" and "Updating the System" of manual.

Procedure for License Authentication

Product Key used in the procedure for license authentication should be matched with the COA label in which the product key contained in Windows Server 2003 is written.

NOTES:

- Execute the activation within 30 days. System may be locked after 30 days is passed.
- COA label may be attached to your server.

Updating the System - Applying Service Pack -

Update the system in the situation below:

- CPU is expanded (expanded to single processor to multi-processor).
- Modified system configuration.
- Recovered the system using recovery process.

The system update brings the correction program provided by Microsoft to be applied to reinforce the system security. The system update is recommended.

Service Pack 2 need not be applied again when Windows Server 2003 CD-ROM which Service Pack 2 is included is used and it is installed.

Go on the section of "Updating the System".

Perform "Updating the System" and application of the "Hotfix (KB921411)".

IMPORTANT: In the situation below, make sure to apply "Updating the System" and "Hotfix (KB921411)".

- Modified system configuration
- Recovered the system using recovery process.

NOTE: If you use Windows Server 2003 CD-ROM which includes Service Pack 2, the application of "Hotfix (KB921411)" is not required.

Application Process of the Hotfix (KB921411)

Apply the "Hotfix (KB921411)" before execute "Updating the System".

1. Log on to the system by the account with administrator authority to the server (such as administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of the server.
3. Click Start menu and [Run], and then execute the following command.

   <When the English version of Windows Server 2003 R2 is used>

   \009\win\winnt\dotnet\qfe\enu\kb921411.exe

   <When the Simplified Chinese version of Windows Server 2003 R2 is used>

   \009\win\winnt\dotnet\qfe\chs\kb921411.exe

   <When the Traditional Chinese version of Windows Server 2003 R2 is used>

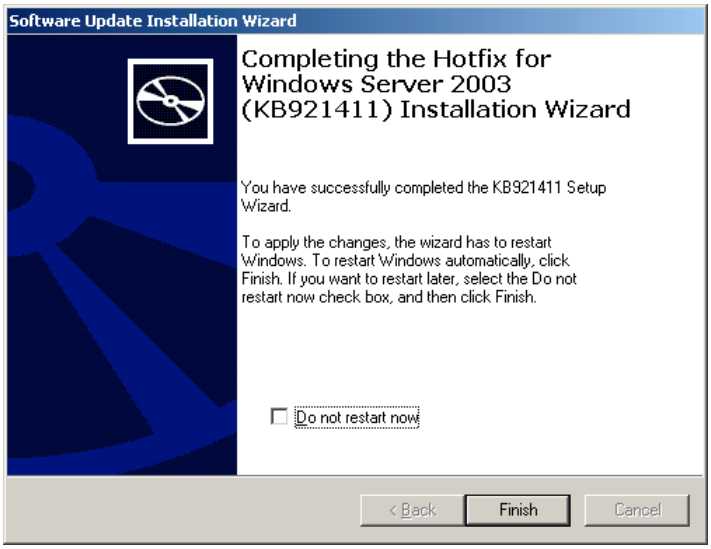
   \009\win\winnt\dotnet\qfe\cht\kb921411.exe

4. When the following message is displayed, click [Next].

   After that, follow the message to continue the process.

Software Update Installation Wizard
Use this wizard to install the following software update:
Hotfix for Windows Server 2003 (KB921411)
Before you install this update, we recommend that you:
- Back up your system
- Close all open programs
You might need to restart your computer after you complete this update. To continue, click Next.
< Back
Next >
Cancel

5. When the following message is displayed, make sure to click [Finish] to restart the system.


Software Update Installation Wizard
Completing the Hotfix for Windows Server 2003 (KB921411) Installation Wizard
You have successfully completed the KB921411 Setup Wizard.
To apply the changes, the wizard has to restart Windows. To restart Windows automatically, click Finish. If you want to restart later, select the Do not restart now check box, and then click Finish.
Do not restart now
< Back
Finish
Cancel

With that, application process of the Hotfix (KB921411) is finished.

Application Process of "Updating the System"

"Updating the System" applies the drivers necessary for NEC Express5800 Series.

Follow this process after Hotfix for Windows Server 2003 (KB921411) had been applied.

> **NOTE:** If you install Windows CD-ROM that contains Service Pack 2 to your system, you do not have to apply Service pack 2 again.

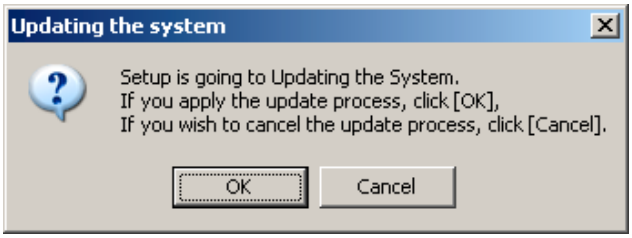
1. Log on to the system with the account that has administrative privilege (e.g. administrator).
2. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive of server.

   The Autorun Menu will be displayed
3. Left-click on [Setup Windows], and then click [Update the system].

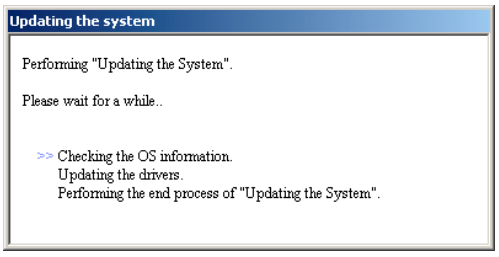
> **NOTE:** Right-clicking on the Autorun Menu produces the same outcome.

4. Follow the message of the screen to proceed the application.

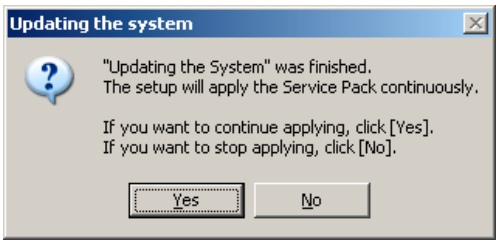
   [OK] dialog box will be displayed.


Updating the system
Setup is going to Updating the System.
If you apply the update process, click [OK],
If you wish to cancel the update process, click [Cancel].
OK
Cancel

> **NOTE:** The following box appears during the update if you have deployed a full installation of Windows Server 2003.
> Wait until the update completes.


Updating the system
Performing "Updating the System".
Please wait for a while..
>> Checking the OS information.
Updating the drivers.
Performing the end process of "Updating the System".

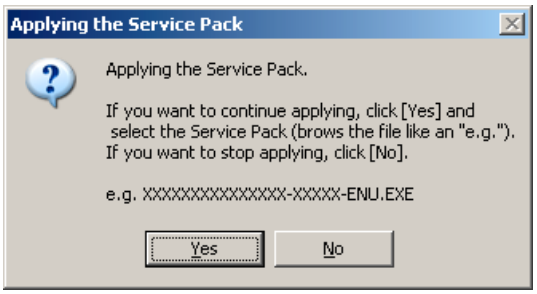
5. When the following message appears, "Updating the System" was finished.


Updating the system
"Updating the System" was finished.
The setup will apply the Service Pack continuously.
If you want to continue applying, click [Yes].
If you want to stop applying, click [No].
Yes
No

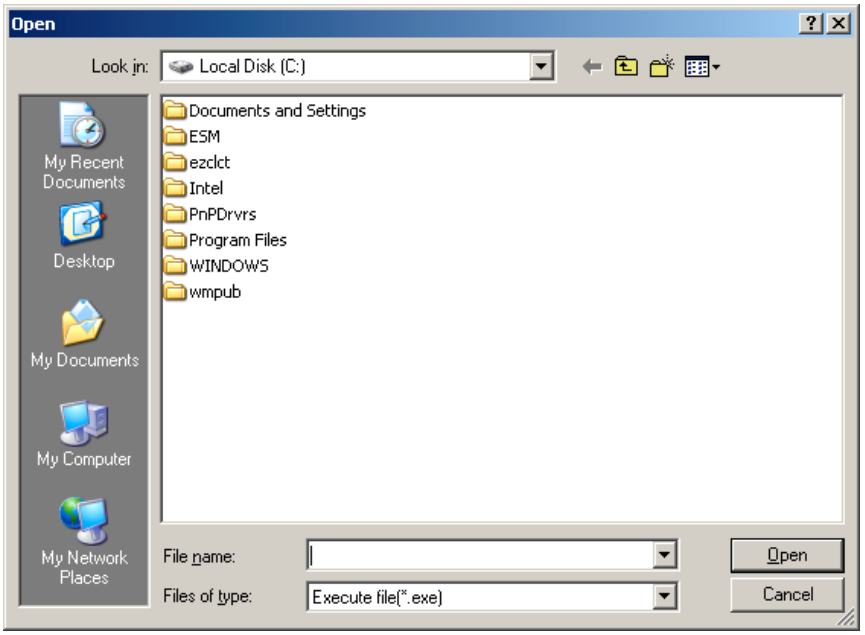
When you apply Service Pack: Click [Yes], and then go to Step 6.

When you don't apply Service Pack: Click [No], and then go to Step 8.

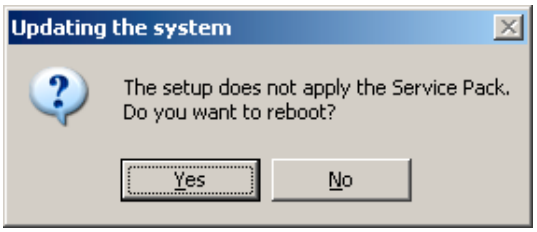
6. When the following message appears, click [Yes].


Applying the Service Pack
Applying the Service Pack.
If you want to continue applying, click [Yes] and
select the Service Pack (brows the file like an "e.g.").
If you want to stop applying, click [No].
e.g. XXXXXXXXXXXXXXX-XXXXX-ENU.EXE
Yes
No

7. When the following message appears, select a Service Pack and click [Open] and then, according to a message, please apply it.



8. When the following message appears, click [Yes] to restart the system.



The system has been updated.

Recovery Process

If "Updating the System" is executed before the application of the "Hotfix for Windows Server 2003 (KB921411)", "!" may be displayed on the USB root hub.

If "!" is displayed on the USB root hub, perform application of the "Hotfix for Windows Server 2003 (KB921411)" and the "Updating the System" according to the following process.

1. Start the Windows Explorer, and click [Tools] and [Folder Options].
2. Select [Files and Folders] - [Hidden files and folders] - [Show hidden files and folders] radio button from Advanced settings in the [View] tab.
3. Check off the following check box in the [Files and Folders] from Advanced settings in the [View] tab, and then click [OK].
   - ❑ Hide extensions for know file type
   - ❑ Hide protected operating system files [Recommended]

   When the message "You have chosen to display protected operating system files..." is displayed, click [Yes].
4. Make sure of the files.

   Open "<System drive:>\WINDOWS\system32\drivers" directory, and make sure usbhub.sys and usbport.sys are exists in the directory.

   If you can not found them, copy the files according to the following process.

   (1) Open "<System drive:>\WINDOWS\system32\dllcache" directory.

   (2) Copy usbhub.sys and usbport.sys from the directory noted above to "<Systemdrive:>\WINDOWS\system32\drivers".
5. Restart the system.
6. Refer to [Application process of the Hotfix (KB921411)] and apply the "Hotfix for Windows Server 2003 (KB921411)".
7. Refer to [Application process of "Updating the System"] and execute "Updating the System".
8. Restart the system.

   With that, process is finished.

DRIVER INSTALLATION AND ADVANCED SETTINGS

This section describes on how to install and setup various standard drivers mounted on the device.

For the information on installing and setting up the driver that is not described in this section, please refer to the document attached to the driver.

PROSet

PROSet is a utility that confirms the function of network contained in network driver.

Utilizing PROSet enables the following items:

- Confirm detailed information of the adapter.
- Diagnose loop back test, packet transmission test and so on.
- Setup of teaming.

Configuring several network adapters as one team provides the server a tolerant environment on any trouble and enhance throughput between the switches.

PROSet is necessary to utilize these features.

Follow the procedure below to install PROSet.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. The [Windows Explorer] dialog starts.

   * The procedure in the case of the standard start menu

     Click Start menu and click [Windows Explorer].

   * The procedure in the case of the classic start menu

     Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "dxsetup.exe" in the following directory.

   \009\win\winnt\dotnet\ma21\apps\prosetdx\win32

   The [Intel® PROSet - InstallShield Wizard] dialog starts.

4. Click [Next].
5. Choose "I accept the terms in the license agreement" and click [Next].
6. Click [Next].
7. Click [Install].
8. When [InstallShield Wizard Completed] window is displayed, click [Finished].
9. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Network Driver

Specify the details of network driver.

One standard network driver that is mounted will be installed automatically, but the link speed and Duplex mode need to be specified manually.

When PROSet is not installed

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Advanced] and specify the [Link Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].

When PROSet is installed

1. Open the [Device Manager]
2. Double-click [(Network Adapter Name)] in the list.
3. Click the [Link Speed] and specify the [Speed & Duplex] value the same as the value specified for HUB.
4. Click [OK].

Also, add or delete any protocols and services if necessary.

You can operate the process on the property dialog box for local area network which can be appeared from [Network and Dial-up Connection].

NOTE: We recommend you to add [Network Monitor] at [Adding Services]. [Network Monitor] can monitor the frame (or the packet) that the computer installing [Network Monitor] sends or receives. This tool is valuable when analyzing network trouble. For information on how to install the tool, see the "Setup for Trouble Process" later in this document.

Re-install the Network Driver

The network driver will be installed automatically.

See Chapter 5, "Optional Network Board Driver" for re-install the optional network board driver.

Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)

See Chapter 5, "Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB)" for re-setting the Adapter Fault Tolerance (AFT)/Adaptive Load Balancing (ALB).

Setting WOL

Refer to the following procedure to enable WOL.

When PROSet is not installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Allow the computer to turn off this device to save power"	ON	ON
"Allow this device to bring the computer out of standby"	OFF	ON

4. Click [Advanced] tab and point to [Enable PME].
5. Set the "Enable" in [Value].
6. Click [OK].
7. Reboot the system.

When PROSet is installed

1. Start Device Manager.
2. Point to [Network adapters] and double click [Intel(R) 82576 Gigabit Dual Port Server Network Connection]/[Intel(R) 82576 Gigabit Dual Port Server Network Connection #2] to open the adapter [Properties].
3. Click [Power Management] tab and change setting in [Wake On LAN] according to the following list.

Setting item	Default setting	Change setting
"Wake On Directed Packet"	ON	ON
"Wake On Magic Packet"	ON	ON
"Wake on Magic Packet from power off state"	OFF	ON

NOTES:

- [Power Saver Options] setting is not necessary to change.
- Above setting will be maintained until manually resetting are executed.

IMPORTANT: The parameters of [Wake On LAN] will not exist, if the network ports are not available for WOL.

4. Click [OK].
5. Reboot the system.

Graphics Accelerator Driver

If you utilize standard graphics accelerator drivers, update your system with NEC EXPRESSBUILDER DVD attached to your system.
Standard graphics accelerator drivers will be installed automatically.

Please follow the following procedure when you want to reinstall the driver individually.

1. Insert the NEC EXPRESSBUILDER DVD into the optical disk drive.

   If the autorun menu is displayed, close menu screen.

2. Click Start menu, point to [Programs], [Accessories] and click [Windows Explorer].

3. Run "Install.bat" in the following directory.

   \009\win\winnt\dotnet\video\install.bat

4. Follow the message to continue the installation.

   If the dialog message "Digital Signature could not been found." appears, select [Yes] to continue.

5. Remove the NEC EXPRESSBUILDER DVD from the optical disk drive, restart the system.

Installing SCSI Controller Driver (N8103-75/95/107)

If you use the SCSI Controller N8103-75/95/107, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SCSI Controller driver will be installed automatically.

Installing SAS Controller Driver (N8103-104A)

If you use the SAS Controller N8103-104A, update your system with NEC EXPRESSBUILDER DVD attached to your system.

The SAS Controller driver will be installed automatically.

Installing RAID Controller Driver (N8103-115)

The installation procedure depends on your environment.

Follow steps below appropriate to your environment.

● If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is used:

You do not need to install the driver manually. It is automatically installed by Windows Plug-and-Play.

● If the Internal RAID Controller (equivalent to N8103-116A) or N8103-116A/117A/118A is not used:

Install the driver by the following procedures.

1. Start [Device Manager] from [Start] menu → [Control Panel] → [Administrative Tools] → [Computer Management].
2. Double-click the RAID Controller which Device Manager lists as Other device.
3. Click [Update Driver].
4. When the "Update Device Driver Wizard" appears, select "No, not this time" and click [Next].
5. Select "Install from a list or specific location [Advanced]" and click [Next].
6. Select "Don't search. I will choose the driver to install" and click [Next].
7. Select "SCSI and RAID controller" and click [Next].
8. Click [Have Disk..].
9. Insert "NEC EXPRESSBUILDER DVD" into the optical disk drive, enter "<drive letter>:\009\win\winnt\oemfd\dotnet\fd1" into "copy manufacturer's file from:" and click [OK].
10. Specify the following driver and click [Next].
    - [LSI Logic MegaRAID SAS 8880EM2 RAID Controller]

The installation of the driver is completed.

Restart the system.

About Windows Activation

Windows Server 2003 must be activated before you can use Windows Server 2003.

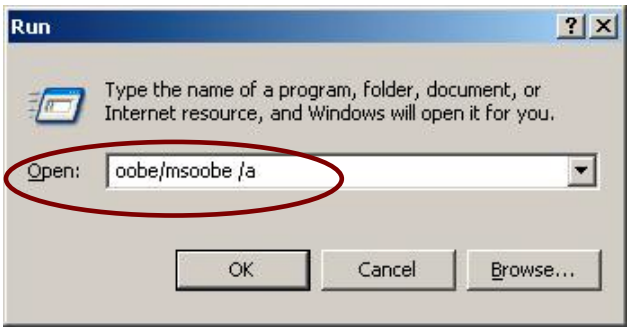
Windows activation process is as follows.

> **NOTE:** When you use Windows Server 2003 R2, activation process is not needed.

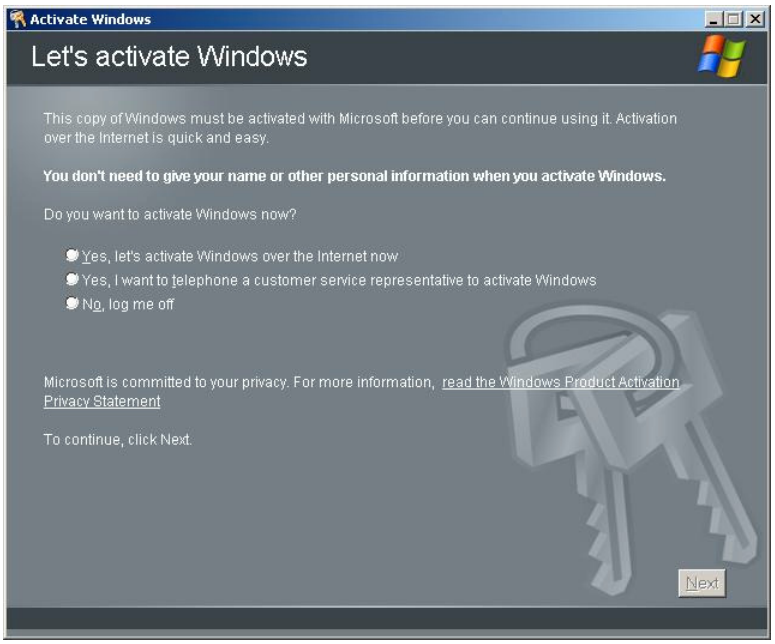
1. Click [Run] on [Start] menu.

   Type as follows in the [Open:] box, and click [OK].

   oobe/msoobe /a



2. When the screen as follows is displayed, click [Next].


Activate Windows
Let's activate Windows
This copy of Windows must be activated with Microsoft before you can continue using it. Activation over the Internet is quick and easy.
You don't need to give your name or other personal information when you activate Windows.
Do you want to activate Windows now?
Yes, let's activate Windows over the Internet now
Yes, I want to telephone a customer service representative to activate Windows
No, log me off
Microsoft is committed to your privacy. For more information, read the Windows Product Activation Privacy Statement
To continue, click Next.
Next

The following screen is displayed.

3. Process "Windows activation" according to the following message.

The procedure to set PAE option

If your 32-bit system has a memory capacity in excess of 4GB, setting PAE option will enable the system to be installed with over 4GB of memory.

> **IMPORTANT:** However, the Microsoft operating system products which support /PAE switch option are limited.
>
> Refer to the following article in Microsoft Knowledge Base to check the supported products.
>
> Microsoft Knowledge Base - Article ID: 291988
> "A description of the 4GB RAM tuning feature and the Physical Address Extension switch"

In Windows Server 2003 system, the PAE option can be set by editing boot.ini.

Below is the example on how to add /PAE switch to Boot.ini file.

1. Click [Start], point to [Settings], and then click [Control Panel].
2. In [Control Panel], double-click [System].
   [System Properties] dialog box will be shown.
3. Click the [Advanced] tab, and then click [Settings] under [Setup and Recovery].
4. Under [System Setup], click [Edit] to open [Boot.ini].
5. Add "/PAE" to [Operating Systems] section in [Boot.ini] file, and then save it.

```
<Example of Boot.ini file>
[boot loader]
timeout=30
default=multi(0)disk(0)rdisk(0)partition(2)\WINDOWS
[operating systems]
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003 "
/fastdetect
multi(0)disk(0)rdisk(0)partition(2)\WINDOWS="Windows Server 2003 ,
PAE" /fastdetect /PAE
C:\CMDCONS\BOOTSECT.DAT="Microsoft Windows Recovery Console " /cmdcons
```

This is the end of editing Boot.ini file.

> **NOTE:** If you choose one of the items in the "Default operating system" drop-down list box in [Setup and Recovery] group box, you can make your system start automatically from the switch you specified.

SETTING FOR SOLVING PROBLEMS

Set for collecting memory dump using the procedure described in Chapter 5.

Appendix G

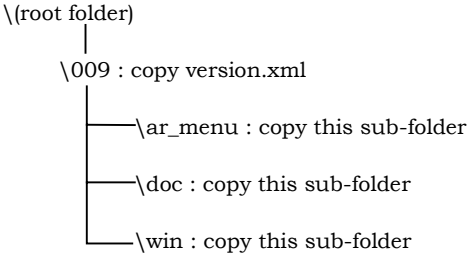
Using a Client Computer Which Has a CD Drive

The NEC EXPRESSBUILDER disk is DVD so that a client computer which you want to use for managing the server needs a DVD drive.

If you want to install the management software of EXPRESSBUILDER to the client without the DVD drive, make a CD-R from EXPRESSBUILDER DVD according to the following steps.

> **NOTE:** This procedure can copy only one CD at the purpose of installing the management software to the client.

1. Insert the EXPRESSBUILDER DVD to the computer which has a DVD drive.
2. If Autorun menu appears, close the menu.
3. Copy the below files of EXPRESSBUILDER to a hard disk by using Explorer.



4. Delete the ar_menu\autorun_menu.xml on the hard disk, and rename the ar_menu\autorun_en.xml on the hard disk to the autorun_menu.xml.
5. Copy the above files/folders to a CD-R.

   Match the root folder when you burn a CD-R.
6. Delete the files/folders that you copied at step 3.
7. Insert the CD-R to a client computer which you want to install the management software.
8. Kick the below file of the CD-R by using Explorer.

   \009\ar_menu\autorun_menu.exe (for Windows 32 bit edition)

   autorun_menu_x64.exe (for Windows 64 bit edition)

(This page is intentionally left blank.)

Appendix H

Product Configuration Record Table

Use this table for information about setup and system environment change.

Hardware

Main Unit						
	Model name		Serial No.		Date Installed	
CPU						
#1	Clock		Serial No.		Date Installed	
#2	Clock		Serial No.		Date Installed	
Memory						
CPU1-DIMM1	Size		Serial No.		Date Installed	
CPU1-DIMM2	Size		Serial No.		Date Installed	
CPU1-DIMM3	Size		Serial No.		Date Installed	
CPU1-DIMM4	Size		Serial No.		Date Installed	
CPU1-DIMM5	Size		Serial No.		Date Installed	
CPU1-DIMM6	Size		Serial No.		Date Installed	
CPU2-DIMM1	Size		Serial No.		Date Installed	
CPU2-DIMM2	Size		Serial No.		Date Installed	
CPU2-DIMM3	Size		Serial No.		Date Installed	
CPU2-DIMM4	Size		Serial No.		Date Installed	
CPU2-DIMM5	Size		Serial No.		Date Installed	
CPU2-DIMM6	Size		Serial No.		Date Installed	
Hard Disk Drive						
#1	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#2	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#3	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#4	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#5	Type			Serial No.		
	Capacity			Date Installed		
	Type number					
#6	Type			Serial No.		
	Capacity			Date Installed		
	Type number					

Monitor						
	Type		Model name		Serial No.	
					Date Installed	
Backup Device						
Slot 1	Size		Capacity		Serial No.	
	Model name		Type number		Date Installed	
PCI Slot #1B						
	Model name				Serial No.	
					Date Installed	
PCI Slot #1C						
	Model name				Serial No.	
					Date Installed	
Printer						
	Model name				Serial No.	
	Manufacturer				Date Installed	
Additional Cabinet for Disk						
	Model name				Serial No.	
					Date Installed	
External Peripheral Device 1						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 2						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 3						
	Model name				Serial No.	
	Manufacturer				Date Installed	
External Peripheral Device 4						
	Model name				Serial No.	
	Manufacturer				Date Installed	

Software

Firmware version			
OS Application of RUR media	 ☐ Apply	Name: Name:	Version: Version:
File system	☐ FAT ☐ Others (	☐ HPFS	☐ NTFS)
Bundled software installed			
Licensed software installed			
Application running when a failure occurred			

(This page is intentionally left blank.)